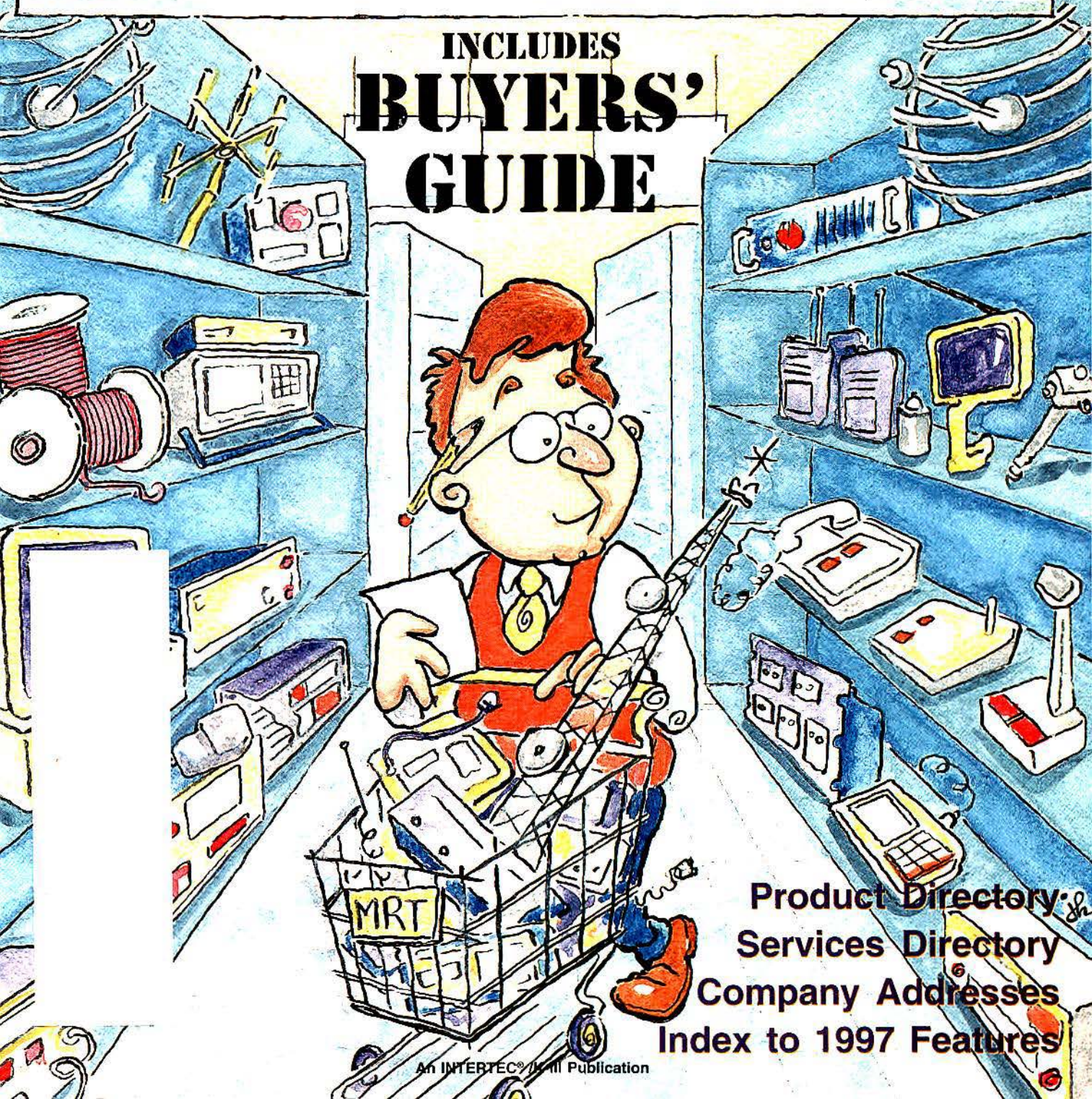
December 1997

Mobile Radio Technology®

Technical information for paging, SMR and private wireless networks.

INCLUDES BUYERS' GUIDE



Product Directory
Services Directory
Company Addresses
Index to 1997 Features

An INTERTEC®/Hill Publication

Finally, an LTR Decoder
with more than just LTR decoding



The NEW DC442 Plus

Incorporates CTCSS, DCS, DTMF, and now LTR Decoding all in one box. The DC442+ allows switching between LTR Trunking in real time, and LTR + Decode, which displays LTR Trunking on one line and DTMF Decoding on the second line. The DC442+ indicates four numeric fields of LTR data: Area Code, Home Repeater, User ID, and Current Repeater ID Estimate. The DC442+ also has a built-in serial port for direct connection to a PC for real time logging of tones and codes. Software supplied. CB232 cable optional. The DC442+, the only decoder that supports all off your decoding needs in one box.

Function: Decodes & displays 50 CTCSS tones, 106 DCS codes, 1023 scrollable DTMF characters, LTR: area code, home repeater, user ID, and current repeater ID estimate
Display: 2 x 16 character w/EL Backlight
Controls: POWER/MODE, UP, DOWN
Inputs
Audio In: 3.5mm stereo phone jack, 400KOhm input impedance
Data Out: 3.5mm mono phone jack, CI-5 protocol
Output: RS232
Power: 7 - 15VDC
Size: 1.8" high x 4.5" wide x 4" deep



DTMF Decode Mode



CTCSS Decode Mode



DCS Decode Mode



Connect with the R11

The DC442 Plus can be used with any receiver directly connected to the discriminator circuit. For portable applications connect it to the audio output of the NEW Optoelectronics R11 Test Receiver.

NEW PRODUCT SPOTLIGHT

Techtoyz ™



Micro Counter

- 10MHz - 1.2GHz frequency range
- 12 Digit LCD Display
- <5mV @ 150MHz sensitivity
- 3 selectable gate times
- Stores 3 frequencies in memory
- Antenna Optional



Micro DTMF Decoder

- Characters decoded 1,2,3,4,5,6, 7,8,9,0,*,#,A,B,C,D
- 12 digit LCD Display
- 2000 character non-volatile memory
- Line input and microphone for decod



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Touch-Screen Control Console



The Vega Model C-6024 is shown with the optional expansion housing which includes an unselect audio speaker, a Clock and a Sequential paging encoder.

The Vega Model C-6024 offers unparalleled ease of use with its touch-screen and independent switches for line selection and instant PTT. It is a unique microprocessor based multi-line, multi-format, desktop radio control console with a capacity to handle up to 24 lines! Any line may be configured for either a dedicated two to four wire radio circuit.

The touch-screen display provides feature selection with a simple touch of a finger. The flexible system offers TLM (sequential tone line modules) to allow the operator a site for transmission and DLM (dial-up access modules) which allow the operator to select a dial-up site for transmission. PLM (telephone line modules) answer or initiate a call on the PSTN.

Other system features include:

- Easy expansion by adding the appropriate number of switch panels (each panel accommodates up to six line cards)
- Line activity indicators flash upon detecting audio
- TX ALL (simulcast) selection activates all tone lines and connected dial-up lines that are on hold
- RX ALL upon selection will monitor all unselected tone lines
- Group Select selection of TX/RX line combinations
- Frequency Selection Standard with F1-F4, expandable to F12

Contact us today to get all the details on how this flexible radio/telephone console can work for you.

VEGA

Division of EVI Audio

Signaling Products Group

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Fax: (626) 444-1342 • FaxBack: (626) 444-2017 / 800-274-2017

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Contents

Mobile Radio Technology®
Technical information for paging, SMR and private wireless networks
Volume 15, Issue 12



On the cover: *MRT*'s 11th annual Buyers' Guide serves as the year-round reference for buying in 1998. More than 1,000 companies are listed representing more than 100 categories of products from air conditioning equipment to repeaters to wattmeters and more than 10 categories of services from accounting and billing to tower space rental. *Cover illustration by John Hayes.*

features

8 1998 Buyers' Guide
MRT's annual directory provides you with essential information you will want to retain for quick reference throughout the year. Products and services are listed, as well as brand names and company addresses.

10 Product directory
More than 100 categories of equipment for the mobile radio industry are listed, as well as more than 1,000 suppliers. Advertisers in this issue are listed in blue ink.

68 Services directory
Mobile radio services such as accounting and billing, consulting, repair, technician training, tower installation and tower space rental are listed, as well as the companies that provide them. Advertisers in this issue are shown in blue ink.

76 Company addresses
An alphabetical listing of more than 1,000 suppliers and service providers appears in this section. Regional sales contacts are listed for some of the advertisers in this issue.

112 Brand names directory
Sort out which company is associated with specific mobile radio industry brand names in this alphabetized listing.

118 Index to 1997 features
All of the 1997 articles plus two departments, "Regulating Technology" and "Technically Speaking," are indexed by subject. An alphabetized author index lists the features and columns that an author has written during the year.

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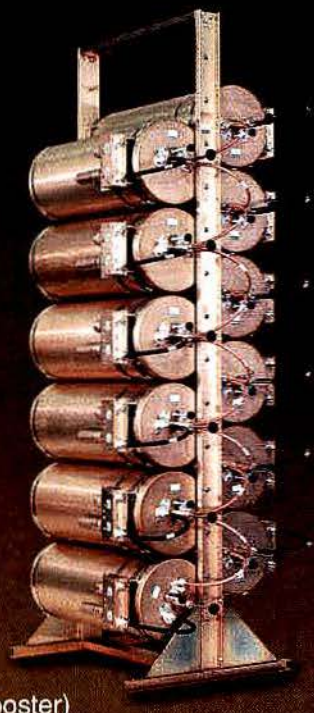


TOWER-MOUNTED PREAMPLIFIER

The new 423-Series brings economy with uncompromised performance to TX RX Systems' family of dependable tower-mounted preamplifiers. Model 423-86A-01-18 has an 18 MHz pass window and maintains better than 100 dB attenuation against transmitters in the 851-869 MHz band.

Model 423-86A-01-18
Pass Band: 806-824 MHz
Gain: 14-15 dB
System Noise Figure: 2.2 dB
3rd O.I.P: +40 dBm
Weight: 22 lbs.
Dimensions: 24" x 6" x 6"

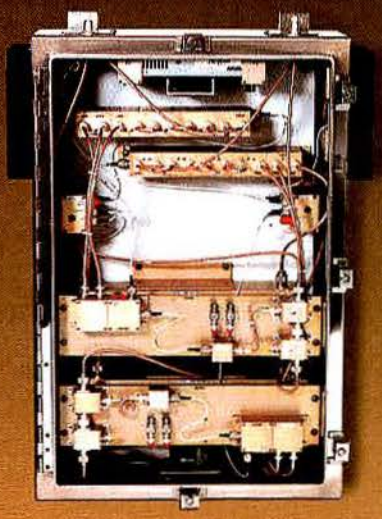
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Model 73-67-25-2B-12
Frequency Range: 406-512 MHz
Min. Channel Separation: 75 KHz
Number of Channels: 12
Tx-to-Tx Isolation: >80 dB
Insertion Loss@250 KHz spacing: 4.0 dB
Max. Power @ 250 KHz Spacing: 150 Watts



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REPEATER AMPLIFIER (aka Signal Booster)

These amplifiers are used to extend radio coverage into areas such as convention centers, prisons, shopping centers, subways, and airports. Models are available with various gains, pass bandwidths, enclosures, supervisory and backup features. Model 61-89A-03-OLC-G2 with its 18 MHz pass windows and high gain is our most popular selling model.

Model 61-89A-03-OLC-G2
Pass Bands: 806-824 MHz & 851-869 MHz
Gain: +83 dB (typical)
3rd O.I.P: +44 dBm (typical)
Output Level Control: 35-40 dB
Enclosure Type: Stainless Steel NEMA 4X

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FAX: 716-549-4772
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Backlash against federal authority in antenna placement policies



Federal legislation has been introduced that may withdraw FCC authority to pre-empt state and local regulation of antenna tower placement. The legislation is a clear expression of backlash against wireless telephone and messaging carriers' attempts to use federal power to overcome local governments' efforts to regulate tower construction.

If passed, the legislation will place decision-making authority squarely in the hands of state and local governments when it comes to antenna placement and setting environmental standards for radio-frequency (RF) energy broadcast from the towers. The legislation, S1350, was introduced Oct. 30 by Senators Patrick Leahy (D-VT) and James Jeffords (R-VT).

Some two-way radio system operators with tower construction projects have faced resistance from local governments, too. Others, because they are "locals," themselves, know their local government officials, take time to follow formal and informal procedures, and thus gain approval for new tower sites. Attempts by some national carriers to bring federal power to bear in antenna site matters have adversely affected some dealer relationships with local governments, making it difficult for them to build new towers.

Two national trade associations have been trying to help wireless telephone and messaging carriers break through local opposition to antenna towers. The Cellular Telecommunications Industry Association (CTIA) and the Personal Communications Industry Association (PCIA) both have pleaded with the FCC to force state and local governments to let carriers build towers more or less when and where they please. The 1996 Telecommunications Act gave the FCC authority to pre-empt state and local regulation of tower placement, but the commission hasn't exercised that authority to the complete satisfaction of many carriers.

For example, some local governments have halted all tower construction in their jurisdictions—a procedure called a moratorium—and the FCC has been reluctant to pre-empt such moratoria.

The proposed legislation settles all that. It would repeal federal authority to pre-empt state and local regulation of tower placement. What's more, it would overturn federal pre-emption of state and local regulation of transmitting facilities on the basis of environmental effects, such as health hazards. The FCC would be barred from making rules to pre-empt state and local regulation of antenna site placement.

Many people like wireless communications. Many of the same people don't want antenna towers in their neighborhoods. Well, they can't see earth-orbiting satellites. If this legislation passes, maybe it will be a boost for satellite communications services, a reprieve from competition for cellular telephone services and a setback to PCS carriers that still must build thousands of base stations to finish their networks.

In the meantime, the FCC is not likely to pre-empt moratoria when the wind blowing from Congress might change direction.

* * *

Paging industry growth

The State of the U.S. Paging Industry, a report issued by Strategis Group, Washington, indicates that paging carriers added 8.6 million net new subscribers in 1996, topping 1995's figure of 8.2 million. "Simple numeric paging remains an enormously popular service," said Elliott Hamilton, vice president of North American Telecommunications for the research company.

Strategis estimates that 66.4 million paging units will be in service by 2002, with subscription growth slowing over the next five years.

"We won't see the dramatic subscriber additions experienced in the past two or three years, but there is sufficient demand to expand the subscriber base by more than 50% in the next four-and-a-half years," said John Zahuranacik, a paging analyst at Strategis. "Slower growth is more of an indication of how widely paging services are used, rather than a hint of doom."

Wait a minute. Wasn't cellular supposed to make paging obsolete? And isn't PCS supposed to make cellular obsolete? And what about the Internet? (Glad you asked.)

* * *

Internet and wireless

A telephone survey conducted by Intelligent Information, Stamford, CT, and Directions for Decisions, Jersey City, NJ, reveals some consumer attitudes toward wireless information services. For example:

- Four out of 10 respondents were aware of wireless information services, with the highest awareness (75%) among alphanumeric pager users.
- About a third of cellular phone users and nearly four out of 10 pager users expressed interest in receiving personalized information services.
- Respondents ranked local news headlines and an "ability to easily search the Internet for information" as their top choices for wireless information services.
- Respondents in the 45–54 age group ranked "information on local events/happenings" as their top choice in information services.
- Both current pager and cellular users ranked "the ability to easily search the Internet for information" as their top choice.
- Nearly half of all respondents in the 16–18 age range said they were "extremely interested" or "very interested" in "the ability to easily search the Internet for information" from a wireless device.

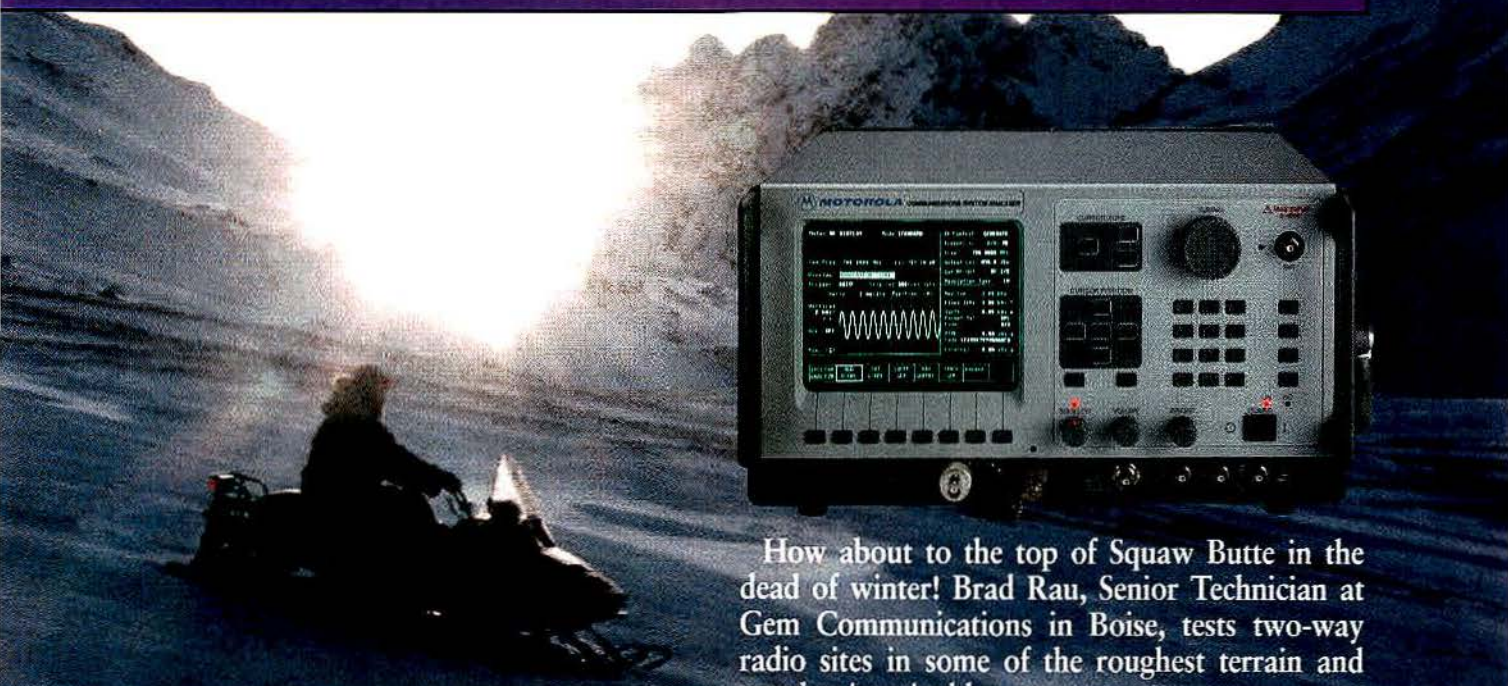
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New commissioners

The U.S. Senate has confirmed President Clinton's appointment of four new FCC commissioners. Bill Kennard (designated as chairman), Harold Furchgott-Roth, Michael Powell and Gloria Tristani joined the commission on Nov. 3.

—Don Bishop

How far will Motorola Analyzers go to prove they're tough?



How about to the top of Squaw Butte in the dead of winter! Brad Rau, Senior Technician at Gem Communications in Boise, tests two-way radio sites in some of the roughest terrain and weather imaginable.

Often, the snow's so deep, Brad has to pack his test equipment on the back of his snowmobile. Not a problem for his Motorola Communication System Analyzer: It's built rough and tough – so it performs like a champ no matter *where* Brad takes it.

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Calendar

1998

February

23–25—Wireless, sponsored by the Cellular Telecommunications Industry Association, Georgia World Congress Center, Atlanta. Contact: 212-964-7000.

March

1–4—ENTELEC, sponsored by the Energy Telecommunications and Electrical Assocation, Marriott River Center, San Antonio, TX. Contact: 281-357-8700.

April

20–23—Expo Comm/Comdex, sponsored by E.J. Krause & Associates, McCormick Place, Chicago. Contact: 301-493-5500.

22–24—International Wireless Communications Expo, co-sponsored by *Mobile Radio Technology*, Las Vegas Convention Center, Las Vegas. Contact: 800-288-8606.

May

11–14—Telecommunications Resellers Association Spring Conference and Exhibition, San Francisco Marriott, San Francisco. Contact: Susannah Gaylord Stoll, 202-835-9898 ext. 3009.

18–21—Vehicular Technology Conference, sponsored by IEEE Vehicular Technology Society, Westin Hotel, Ottawa, Canada. Contact: 908-562-3870.

20–22—Canadian Wireless, sponsored by the Canadian Wireless Telecommunications Association, Metro Toronto Convention Center, Toronto, Canada. Contact: 613-233-4888, ext. 102.

June

8–11—Supercomm, sponsored by USTA and TIA, Georgia World Congress Center, Atlanta. Contact: 202-326-7300.

28–July 2—UTC National Conference & Exhibition, sponsored by UTC, The Telecommunications Association, Hynes Convention Center, Boston. Contact: 202-872-0030.

July

15–17—Communications Expo/Show of the Americas, Miami Beach Convention Center, Miami. Contact: Jackie Gonzales, 305-412-9000.

August

9–13—International Association of Public-Safety Communications Officials (APCO) National Conference, Albuquerque Convention Center, Albuquerque. Contact: 904-322-2500.

September

23–25—Personal Communications Showcase, sponsored by Personal Communications Industry Association, Orange County Convention Center, Orlando, FL. Contact: 703-739-0300.

23–25—PCS Latin America, sponsored by the Personal Communications Industry Association, Orlando, FL. Contact: Cathy Graham, 703-739-0300, ext. 3706.

October

12–14—Wireless Apps, sponsored by the Cellular Telecommunications Industry Association, Bally's Las Vegas, Las Vegas. Contact: 202-785-CTIA.

14–16—TelecomLatina, co-sponsored by *Mobile Radio Technology*, Miami Beach Convention Center, Miami. Contact: 1-800-288-8606.

November

11–15—Communications Marketing Conference, sponsored by the Communications Marketing Association, San Diego Princess Resort, San Diego, CA. Contact: Bernie Brownson, 303-371-8182.

20—Radio Club of America, Communications Symposium, 89th Anniversary Dinner and Awards Presentation, New York Athletic Club, New York. Contact: Gerri Hopkins, 908-842-5070.

Mobile Radio Technology

Technical information for paging, SMR and private wireless networks

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BPA

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The Landscape of Radio is Changing

The migration from analog to digital communication is altering the landscape of the radio industry. Transcrypt International has positioned itself at the center of this evolutionary process by manufacturing a radio which incorporates the latest in analog and digital technology.

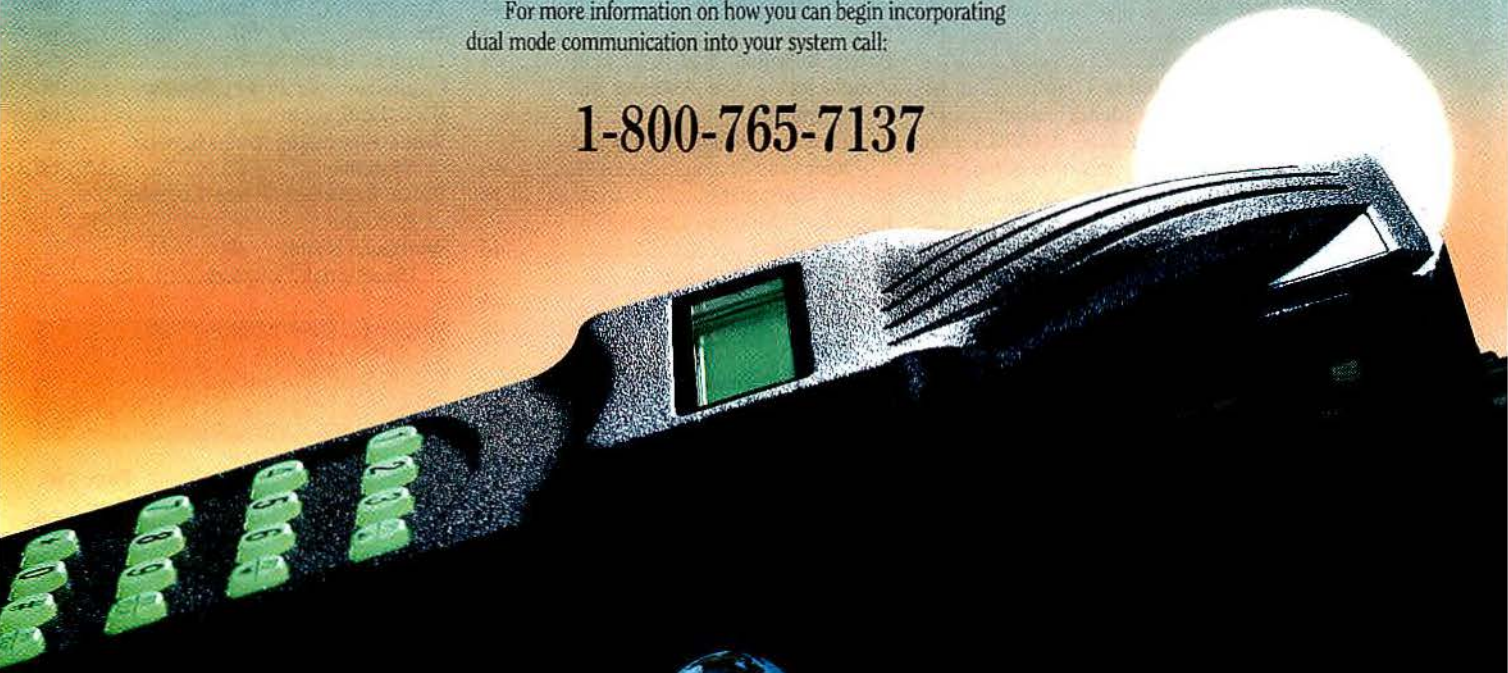
With two modes of operation, Transcrypt's Stealth 25 portable radio bridges the gap between digital and analog communication. Radio users can switch seamlessly from APCO 25 digital to a conventional analog channel or Motorola SmartNet™ trunking with one simple turn of the mode switch.

The Stealth 25 also offers several very important security options. For wide range radio compatibility, the Stealth 25 can be optionally equipped with digital encryption standards which are compatible with Motorola's DES and DES-XL™ as well as APCO DES. Along with encryption security, the Stealth 25 comes equipped with Transcrypt's own Crypto-Voice-Plus® scrambling technology.

In addition to voice security, each Stealth 25 portable radio is manufactured with a sixteen button keypad. The radio is fully keypad programmable and offers authorized users the ability to reprogram features such as frequencies, CTCSS, and DCS manually.

For more information on how you can begin incorporating dual mode communication into your system call:

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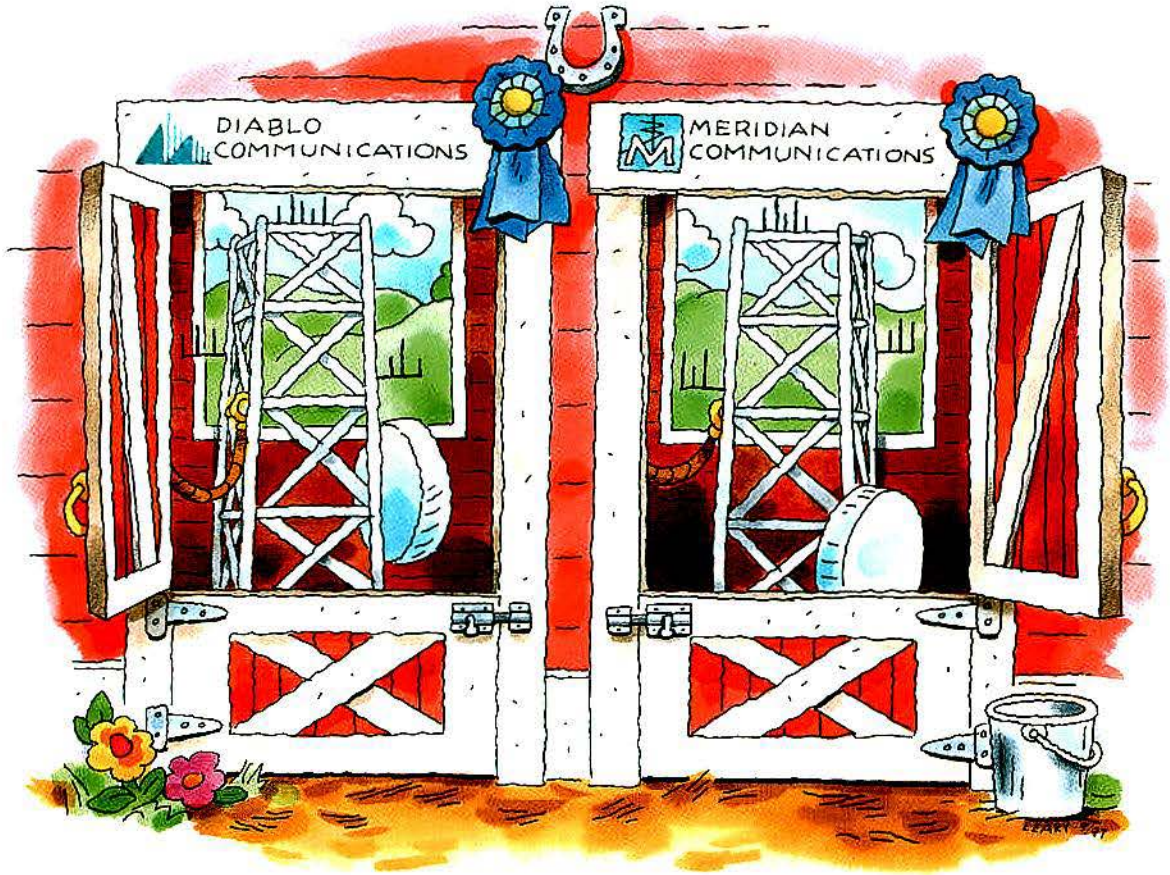
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With these two thoroughbreds now in our stable, American Tower Systems offers you the best in the West.

First, American Tower Systems corralled Meridian Communications and their 71 prime Southern California antenna sites. Now, with the proud addition of Diablo Communications' 149 California sites, American Tower Systems' western growth is in full gallop. Furthermore, we recently acquired 42 premier sites in California's central valley from Communication Site Development. From San Diego to San Francisco and beyond, American Tower Systems now offers over 260 of California's very best sites.

Nationwide, we offer over 655 sites and facilities to meet your wireless communication requirements. For example: a building top site at One Financial Center in Boston; a site atop Saddle Peak in Malibu; a monster thousand-foot candelabra tower serving the West Palm Beach market; the I-95 wireless tower network in South Florida; as well as Mt. Diablo in Northern California.

Although we're clearly heading for the winner's circle as the country's largest source for antenna sites, you'll still find us friendly to do business with. In fact, the professionals you've come to trust before we came along are still on the job. And if by some chance American Tower Systems doesn't have the right site for you, we'll be adding hundreds more soon. We'll also work with you to find sites and build to your specifications.

Why not get on track with a visit to our website or call for information. With American Tower Systems in the lead, you'll be off to a fast start. **Great sites. Great service. Nationwide.**

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No. California: (800) 236-3806, Ext.227 • So. California (800) 400-SITE

Circle (18) on Fast Fact Card

Product Directory

Air Conditioning for Shelters

Auto-Comm Engineering

Bard Mfg
Contor Terminals
FWT
Hill Radio Communications
Liebert
Rittal
Sun Mfg

Airtime Billing Eqpt

Berkeley Varitronics Systems
CyberSym Control Systems
Eastcom Industries
Escotel Software
EZ Soft Business Software/EZ Pager
IDA
In-Touch Management Systems
Lynn-Arthur Assoc
John Mitchell
Subscriber Computing
Trident Micro Systems
Zetron

Alarm & Security Systems

Accele Electronics
Appropriate Data Communications
ATX Research
Barnett Engineering
Berkeley Varitronics Systems
Berry Controls
Comm-Tech International
Communications & Signals
CES Wireless Technologies
Compuquest
CRN Telemetry Devices
Jack Daniel
Danmax Communication
Dataprobe
Delcom Industries
DPS
Eagle Wireless International
Eastcom Industries
EPCOM
Falcon Direct
FWT
Grayhill
Gronel Assoc
King Communications USA
David Levy
Manon Engineering
MCM Electronics
Merry Electronics
Miracom Technologies
Monicor Electronics
Mountain Communications
Pacific Circuit Design
PageTek
Paging Products International
Palstar Bramco
Peninsula Wireless Communications
Polaris Industries
Positron
Racom Products
Richardson Electronics
Solid-State Communications
CSI/Speco
Talley Communications
Tekno Industries
Telemobile
TESSCO
Thunder Eagle
TLP Technologies
Visiplex
Whelen Engineering
World Communications Group
Zetron

Alternate Energy Sources

Applied Power
Atlantic Solar Products
Auto-Comm Engineering
Direct Power & Water
Exeltech
Henry Radio
Hutton Communications
Manon Engineering
New World Power Technology
Olympic Radio
Photocomm
Photovoltaic Resources International
Remote Power
Siemens Solar Industries
Solarex
Talley Communications
Teledyne Brown Engineering Energy System
Zirco

Amplifiers: RF Power, Mobile/Portable Amplifier-Chargers

Adams Distributing
AML Communications
Amplifier Research
Andrew
AF CommSupply
Auto-Comm Engineering
AVCOM of Virginia
Beam Radio
Benelec
Cartwright Communications
Celwave
Communication Engineers
The Communication Express
Communications & Signals
CPI SATCOM Div
CTT
DataCom Systems
Datron World Communications
Delcom Industries
DX Radio Systems
Eagle Wireless International
ElectroCom Communication Systems
Electro-Comm Dist
EMR
EPCOM
Fanon Courier
Futurecom Systems Group
General Communications
Global Wireless Communication Products
E Gracey Electronics
Harris/RF Communications Div
Henry Radio
IMT ComSys
Jan Communications & Electronics
Kaval Telecom
Lunar Industries
Marketronics
MFJ Enterprises
Morcom International
Olympic Radio

Powerwave Technologies
Primus Electronics
Radio Communications Wholesalers
Secom Systems
Silicon Valley Power Amplifiers
Spectrum Communications
Stuart Electronics
Synetcom Digital
Tadiran
Talley Communications
Telemobile
TelePath
TPL Communications
Tunnel Radio of America
VoCom Products
Webster Communications
Wisco International
C W Wolfe Communications

Amplifiers: Signal Boosters, Bi-Directional Amplifiers

AML Communications
Beam Radio
Cartwright Communications
Celwave
Jack Daniel
Davicom Technologies
Electronic Products
EMR
Futurecom Systems Group
Global Wireless Communication Products
Primus Electronics
Talley Communications
TelePath
3dbm
Tunnel Radio of America
TX RX Systems
VoCom Products

Amplifiers: Towertop

Ace Antenna
ADC Telecommunications
Allen Telecom
AML Communications
Andrew
AF CommSupply
Auto-Comm Engineering
Beam Radio
Cartwright Communications
Celwave
Communication Engineers
The Communication Express
Conductus
CTT
Jack Daniel
Davicom Technologies
Decibel Products
Eastcom Industries
Electronic Products
EMR
FWT
Global Wireless Communication Products
Hazeltine
LeBlanc Communications
LGP
Lunar Industries
Manon Engineering
Marketronics
Powerwave Technologies
Primus Electronics
Santa Fe Distributing
Secom Systems
Sinclair Technologies Sinclabs
Talley Communications

Telewave
Telewave Ltd.
TPL Communications
TX RX Systems
Wacom Products
Webster Communications

Antenna Site Eqpt

Ace Antenna
Adams Distributing
Advanced Receiver Research
Allen Telecom
Alltel Supply
Alpha Industries
AML Communications
AnchorGuard
AF CommSupply
Austin Antenna
Auto-Comm Engineering
Beam Radio
Berkeley Varitronics Systems
Canadian Marconi
Cartwright Communications
Celwave
Communication Engineers
The Communication Express
Communications & Signals
Comsat RSI/Jefa Wireless Services

Conductus
D&L Communications
Jack Daniel
Danmax Communication
Davicom Technologies
Decibel Products

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Site Master makes sure small problems don't turn into big ones. It records antenna system signature characteristics and stores them for comparison over time. Site Master even works in the presence of live site interference. And thanks to Frequency Domain Reflectometry, potential problems can be pinpointed and repaired, saving time and money. That's what preventive maintenance is all about.

But seeing is believing. For information or to set up a demonstration, call 1-800-ANRITSU today.

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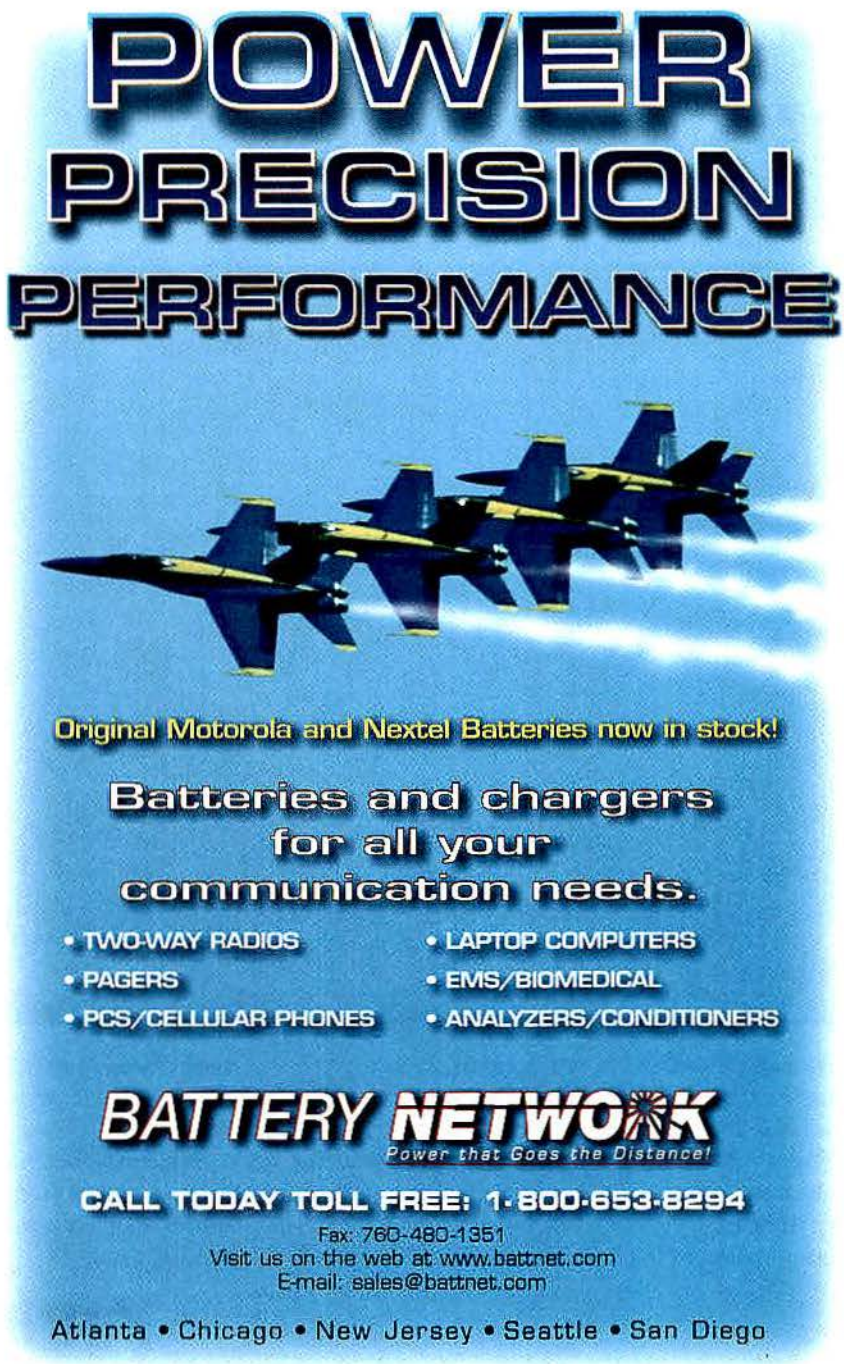
Delcom Industries
DP Electronics
E A G L E
Eastcom Industries
Electro-Comm Dist
Electronic Products
EMR
Environmental Technology
EPCOM
ERI-Electronics Research
Filtronetics
General Communications
Global Wireless Communication Products
Hark Systems
Harris/RF Communications Div
Hite Electronic Sales
Hutton Communications
Illinois Superconductor
Industrial Communication Engineers
Jan Communications & Electronics
L-3 Communications Narda Microwave-West
LGP
Lockheed Martin Microwave-Narda
Lockheed Martin L-3 Communications Narda Microwave West
Manon Engineering
Marketronics
Microwave Filter
Motorola Aftermarket Products
Olympic Radio
Peninsula Wireless Communications
Primus Electronics
Pulstar Distributing
Radiall
Radio Control Systems (RCSI)
RELM Communications
Richardson Electronics
Salisbury Engineering
Santa Fe Distributing
Scala Electronic
Secom Systems
Sharp Communication
Sinclair Technologies Sinclabs
Spectrum Communications
Stealth Network Technologies
Talley Communications
TelePath
Teletech

TELEWAVE, INC.

Telewave
Telewave Ltd.
Trilithic
TX RX Systems
Wacom Products
Webster Communications
Zetron

Antennas, Base

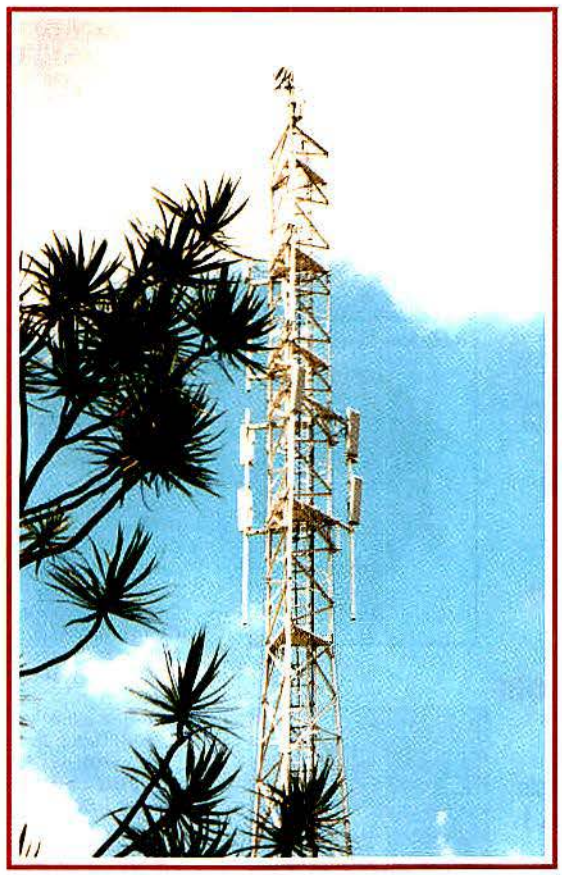
AAT Communications Systems
Ace Antenna
Adams Distributing
Advanced Electronic Applications
AEA Div of Tempo Research
Air Comm
Allen Telecom
Andrew
Antenex
AF CommSupply
Antenna World
Antennaco
ArrayComm
Austin Antenna
Beam Radio
Bear Communications
Benelec
Cartwright Communications
Cellnet Communications
Celwave
Centurion Communications
Childs Antennas
Codan
Comark Distributing
Communications & Signals
Comprod Communications
Comsat RSI/Jefa Wireless Services
Comtelco Industries
CSS Power
Cushcraft
D&L Communications
D&R Associates
Jack Daniel
Danmax Communication
DAPA
Dataradio
Davicom Technologies
Decibel Products
Delcom Industries
DP Electronics
Electro-Comm Dist
Electronic Products
EMR
EPCOM
Ericsson
ExCellular Communications
Falcon Direct
Gabriel Electronics
General Communications
Global Wireless Communication Products
E Gracey Electronics
Harris/RF Communications Div
Hazeltine
Hill Radio Communications
Richard Hirschmann of America
Hite Electronic Sales

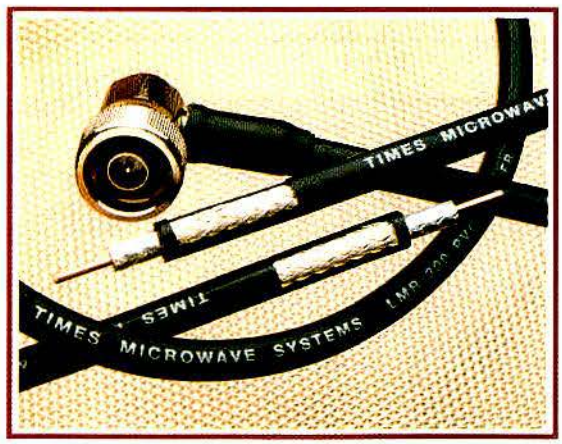


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Times Cable in Stock and Ready to Ship







Hutton Communications stocks **Times Microwave Systems** coaxial cable for base station, control, and mobile antenna applications and for cable jumpers. Times has earned an outstanding reputation for low loss, highly shielded, flexible cable at a lower cost than other types of coaxial cable. Hutton stocks Times cable from 3/16" to 1 1/4" in diameter and a wide-range of easily attachable, low cost connectors.

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Latcom
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Marketronics
Maxrad
MCM Electronics
Mechem Electronics
MFJ Enterprises
Mobile Mark
Monicor Electronics
Morcom International
Motorola-IDEN Group
Motorola Land Mobile Products Sector
National Radio
NCG/COMET Antenna
New-Tronics Antenna
NSI Communication
Olympic Radio
BearCom LP
PMC Assoc
Primus Electronics
Procomm USA
Pulstar Distributing
Radio Communications Wholesalers
Radio Midwest
Radio Wholesale Marketing
RF Products
Santa Fe Distributing
Scala Electronic
Schaefer Radio
Secom Systems
Sinclair Technologies Sinclabs
Spilsbury Communications Div of Racal Canada
Stealth Network Technologies
Steinbrecher
Stuart Electronics
Talley Communications
Telemobile
TelePath

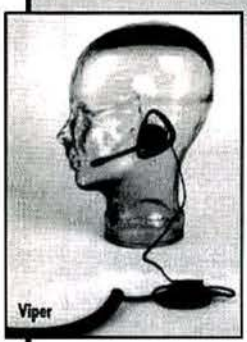
TELEWAVE, INC.

Telewave
Telewave Ltd.
TESSCO
The Communication Express
TX RX Systems
Les Wallen USA
Webster Communications
Wisco International
World Communications Group

Antennas, Mobile

AAT Communications Systems
Accele Electronics
Ace Antenna
Adams Distributing
AEA Div of Tempo Research
Air Comm
Allen Telecom
Allgon Mobile
Aluma Tower
Andrew
Antenex
AF CommSupply
Antenna World
Austin Antenna
Beam Radio
Bear Communications
Benelec
Cartwright Communications
Cellnet Communications
Cellular Accessory Warehouse
Cellular Enterprises
Cellular Solutions
Centurion Communications
Childs Antennas
Codan
Com-Rad Industries
Comark Distributing
Communications & Signals
Comprod Communications
Comsat RSI/Jefa Wireless Services
Comtelco Industries
Cushcraft
D&L Communications
D&R Associates
Danmax Communication
Dataradio
Davicom Technologies
Delcom Industries
DH Marketing Manufacturers Representative
Electro-Comm Dist
Electronic Products
EMR
EPCOM
ExCellular Communications
Falcon Direct
General Communications
Global Wireless Communication Products
E Gracey Electronics
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Richard Hirschmann of America
Hutton Communications
Inwave
Jan Communications & Electronics
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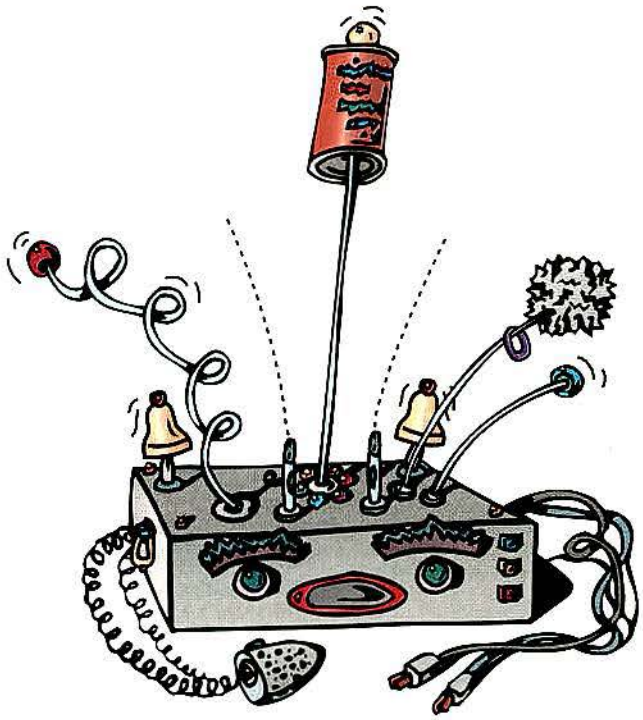
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SONIC Communications, Inc.
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New Ipswich, NH 03071 USA
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Fax: 603-878-1773

WEST COAST
SONIC Communications (West), Inc.
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Inglewood, CA 90301
Tel: 310-641-7397
Toll Free: 888-766-4200

Circle (7) on Fast Fact Card

THE NEXT TIME SOMEBODY TRIES TO SELL YOU ON A GLITZY, SOUPED-UP TWO-WAY, YOU MIGHT WANT TO ADJUST THE SQUELCH



Forget all the fancy bells and whistles. All you need is a two-way radio that does the job, plain and simple. And that's exactly what you get with the new **BANTAM**™ from Midland.

It's small enough to hold in the palm of your hand, tough enough to meet rugged military specs and loaded with features you'll use everyday. Just mount it under the dash and it's ready to go to work.



The **BANTAM** gives you up to 20 channels wideband coverage with a choice of 150-174 MHz VHF or 450-470 MHz UHF. Plus, it offers built-in programmable CTCSS, DCS and CS; multi-mode 12.5/25 kHz; and fast priority scanning.

So, if you're ready to get down to business, call **888-669-4567**, *ext. 1122*, for a free brochure about the **BANTAM**.



MIDLAND USA
www.midlandusa.com

☐ **YES** please send me the ***free*** brochure about Midland's new Bantam two-way. Call **888-669-4567 ext. 1122**.



Or mail to: Marketing Department; Midland USA, Inc.
1690 N. Topping Avenue; Kansas City, MO 64120

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COMPANY _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

PHONE () _____ FAX () _____

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Marketronics
Maxrad
MCM Electronics
Mechem Electronics
MFJ Enterprises
Midland Land Mobile Radio
Mobile Mark
Monicor Electronics
Morcom International
Motorola-IDEN Group
Motorola Aftermarket Products
Motorola Land Mobile Products Sector
Mountain Communications
National Radio
NCG/COMET Antenna
New-Tronics Antenna
Northpoint Communications Products
NSI Communication
Olympic Radio
ORA Electronics
BearCom LP
PMC Assoc
Primus Electronics
Procomm USA
Pulstar Distributing
Radio Communications Wholesalers
Radio Midwest
Radio Wholesale Marketing
RF Products
Santa Fe Distributing
Schaefer Radio
Secom Systems
Shinwa Communications of America
Sinclair Technologies Sinclabs
Smith Communications Service
Steinbrecher
Stuart Electronics
Talley Communications
Telemobile
TelePath
TESSCO
The Communication Express
Les Wallen USA
Webster Communications
Wisco International
World Communications Group

Antennas, General

Ace Antenna
Adams Distributing
Advanced Fox Antennas
AEA Div of Tempo Research
Allen Telecom
Alltel Supply
Alpha Industries
Aluma Tower
Andrew
Antenex
AF CommSupply
Antenna World
Antennaco
Antennas America
Austin Antenna
Auto-Comm Engineering
Beam Radio
Bear Communications
Benelec
Cablewave Systems Div (RFS)
Cartwright Communications
Cellnet Communications
Cellular Solutions
Celwave
Centurion Communications

Centurion International, Inc.

Centurion International
Childs Antennas
Codan
Comark Distributing
Communication Engineers
Communications & Signals
Comprod Communications
Comsat RSI/Jefa Wireless Services
Comsat RSI Wireless Antennas
Comtelco Industries
Cushcraft
D&L Communications
D&R Associates
Danmax Communication
Datron World Communications
Delcom Industries
Dowit Service
DP Electronics
DTC Communications
Earmark
Eastcom Industries
Electro-Comm Dist
Electronic Products
EMR
EPCOM
Ericsson
ExCellular Communications

Gabriel electronics INCORPORATED

Gabriel Electronics
General Communications
Global Wireless Communication Products
E Gracey Electronics
Harris/RF Communications Div
Richard Hirschmann of America
Hite Electronic Sales
Hulse Enterprises
Hutton Communications
Illumicell
IMT ComSys
Jan Communications & Electronics
JB Communications
Kaval Telecom
Kenwood Communications
Kenwood Systems Group
Kintronic Labs
Kreckman

Larsen™

Larsen Electronics
LBA Technology
LeBlanc Communications
Lunar Industries
Manon Engineering
Marketronics
Maxrad
MCM Electronics
Metawave Communications
MFJ Enterprises
Microflect
Mobile Mark
Monicor Electronics
Morcom International
Motorola Land Mobile Products Sector
Mountain Communications
Mouser Electronics
NCG/COMET Antenna
Nearson
New-Tronics Antenna
Norand
Olympic Radio
ORA Electronics
BearCom LP
Paragon Engineering
PMC Assoc
Primus Electronics
Procomm USA
Pulstar Distributing
Radio Communications Wholesalers
Radio Midwest
Rapid Deployment Towers
RF Products
Sabre Communications
Santa Fe Distributing
Scala Electronic
Secom Systems
Sharp Communication
Sinclair Technologies Sinclabs
Sky Probes/Modublox
Smith Communications Service
Stealth-Cellular IC
Stuart Electronics
Tactical Electronics
Talley Communications
Telemobile
TelePath
TESSCO
The Communication Express
Trylon-TSF
Les Wallen USA
Webster Communications
Z-Technology

Antennas, Portable

AAT Communications Systems
Ace Antenna
Adams Distributing
Advanced Electronic Applications
AEA Div of Tempo Research
Air Comm
Allen Telecom
Allgon Mobile
Aluma Tower
Amplifier Research
Andrew
Antenex
AF CommSupply
Antenna World
Antennaco
Austin Antenna
Beam Radio
Bear Communications
Benelec
Cartwright Communications
Cellnet Communications
Cellular Accessory Warehouse
Cellular Enterprises
Cellular Solutions
Centurion Communications
Centurion International
Childs Antennas
Comark Distributing
Communications & Signals
Comsat RSI/Jefa Wireless Services
Cushcraft
D&L Communications
D&R Associates
Danmax Communication
Davicom Technologies
Delcom Industries
Earmark
Electro-Comm Dist
Electronic Products
EPCOM
ExCellular Communications
Falcon Direct
General Communications
Global Wireless Communication Products
E Gracey Electronics
Harris/RF Communications Div
Hutton Communications
Inwave
Jan Communications & Electronics
JB Communications
Larsen Electronics
LBA Technology
Lett Electronics
David Levy
Manon Engineering
Maxrad
MCM Electronics
Mechem Electronics
MFJ Enterprises
Midland Land Mobile Radio
Mobile Mark
Monicor Electronics
Morcom International
Motorola-IDEN Group
Motorola Aftermarket Products
Motorola Land Mobile Products Sector
Mountain Communications
National Radio
NCG/COMET Antenna
Nearson
New-Tronics Antenna
ORA Electronics
BearCom LP
Paragon Engineering
PMC Assoc
Primus Electronics
Procomm USA
Pulstar Distributing
Radio Communications Wholesalers
Radio Midwest
Radio Wholesale Marketing
Rapid Deployment Towers
RF Products
Santa Fe Distributing
Schaefer Radio
Secom Systems
Shinwa Communications of America
Sinclair Technologies Sinclabs
Smith Communications Service
Spilsbury Communications Div of Racal Canada
Stuart Electronics
Talley Communications
Telemobile
TelePath
TESSCO
The Communication Express
Les Wallen USA
Wisco International

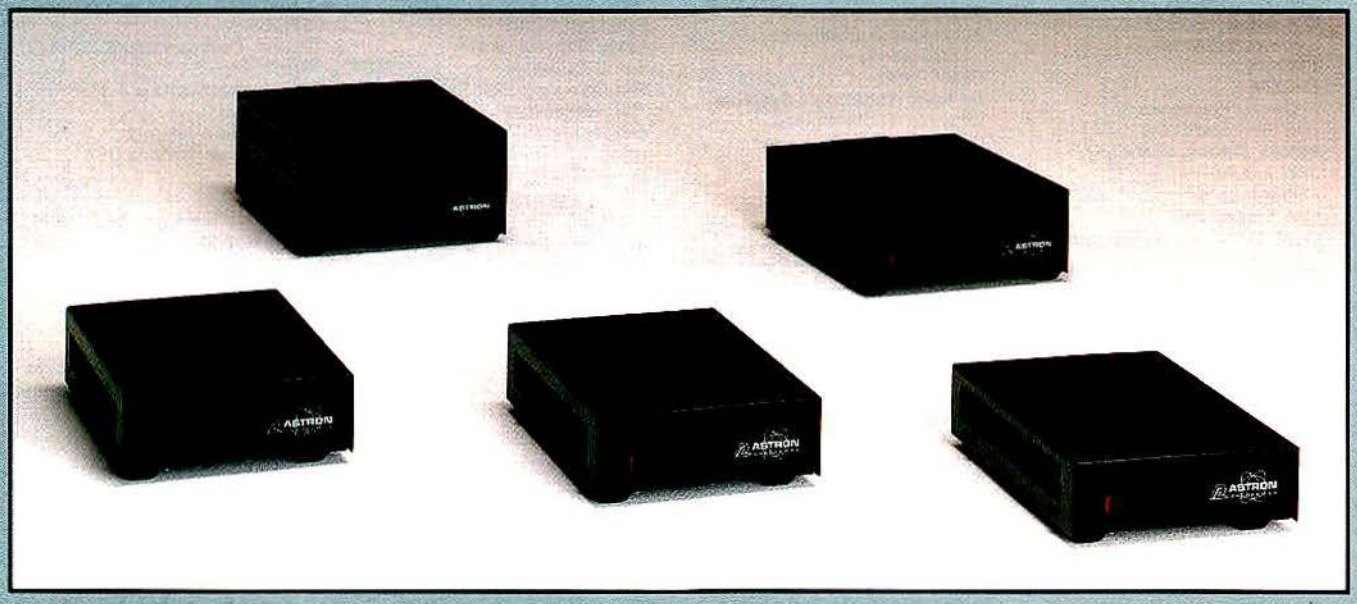
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SPECIFICATIONS:

INPUT VOLTAGE: 90-132 VAC 50/60 Hz OR 180-264 VAC 50/60 Hz SWITCH SELECTABLE

OUTPUT VOLTAGE: 13.8 VDC

MODEL	CONT. AMP	ICS	SIZE (inches)	WT.(lbs.)
SS-10	7	10	2.3 x 6 x 9	3.2
SS-12	10	12	2.3 x 6 x 9	3.4
SS-18	15	18	2.3 x 6 x 9	3.6
SS-25	20	25	2 7/8 x 7 x 9 3/8	4.2
SS-30	25	30	3 3/4 x 7 x 9 5/8	5
SS-25M*	20	25	2 7/8 x 7 x 9 3/8	4.2
SS-30M*	25	30	3 3/4 x 7 x 9 5/8	5

- *with separate volt and amp meters
- All SS power supplies are available in a RACK MOUNT VERSION (3.5 x 19 x 9 3/8)
- To order Rack Mount Version change SS to SRM (example: SRM-10)

ASTRON CORPORATION

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www.astroncorp.com

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Delcom Industries
EAGLE
Eastcom Industries
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E Gracey Electronics
Hite Electronic Sales
Hutton Communications
JFW Industries
Kintronic Labs
LBA Technology
Lockheed Martin Microwave-Narda
Manon Engineering
MCM Electronics
MFJ Enterprises
Precision Tube Coaxitude Div
Primus Electronics
Pulstar Distributing
Radiall
Santa Fe Distributing
Secom Systems
Sharp Communication
Talley Communications
Telephonics
Telewave
TESSCO
The Communication Express
Trilithic
Trompeter Electronics
Wacom Products
Webster Communications
Wisco International

Automatic Number Identification

Adams Distributing
Auto-Comm Engineering
Autocode
Automation & Electronics Engineering
Beam Radio
Berkeley Varitronics Systems
Cimarron Technologies
CML Technologies
Coded Communications
Communications & Signals
CES Wireless Technologies

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Pulstar Distributing
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Rayfield Communications
Secom Systems
Selectone
Sigtec America
Solid-State Communications
Synetcom Digital
Talley Communications
Tekno Industries
The Communication Express
TLP Technologies
Zetron

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DataBurst Technologies
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Dinet
Eagle Wireless International
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Geotek Communications
IDA
Jan Communications & Electronics
KAVIcomm
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King Communications USA
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METS
Midwest Data Services
Navigation Data Systems
OCS Technologies
PacComm Packet Radio Systems
Radio Communications Wholesalers
Raytheon/TMS
RoameR One
Sigtec America
Synetcom Digital
Tekno Industries
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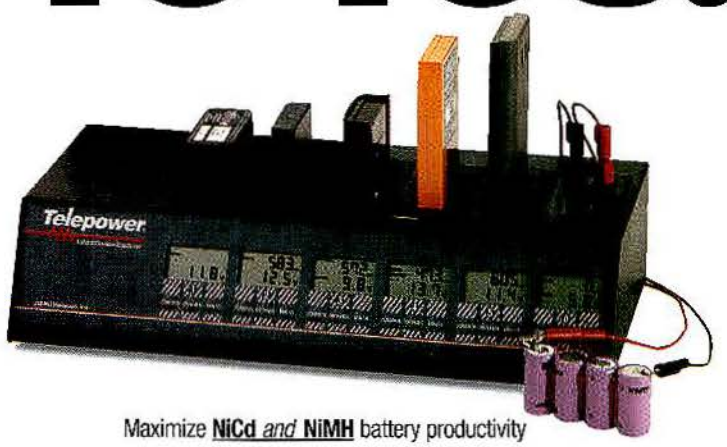
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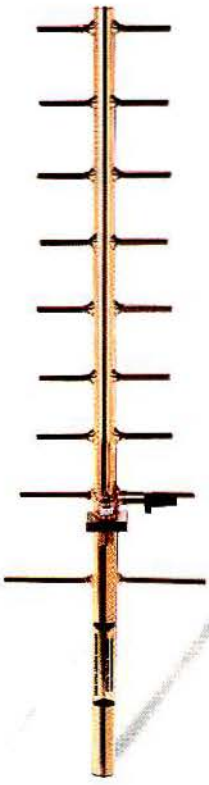
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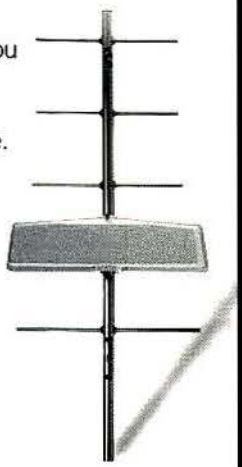


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Cellular Solutions
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Contact East
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Eastcom Industries
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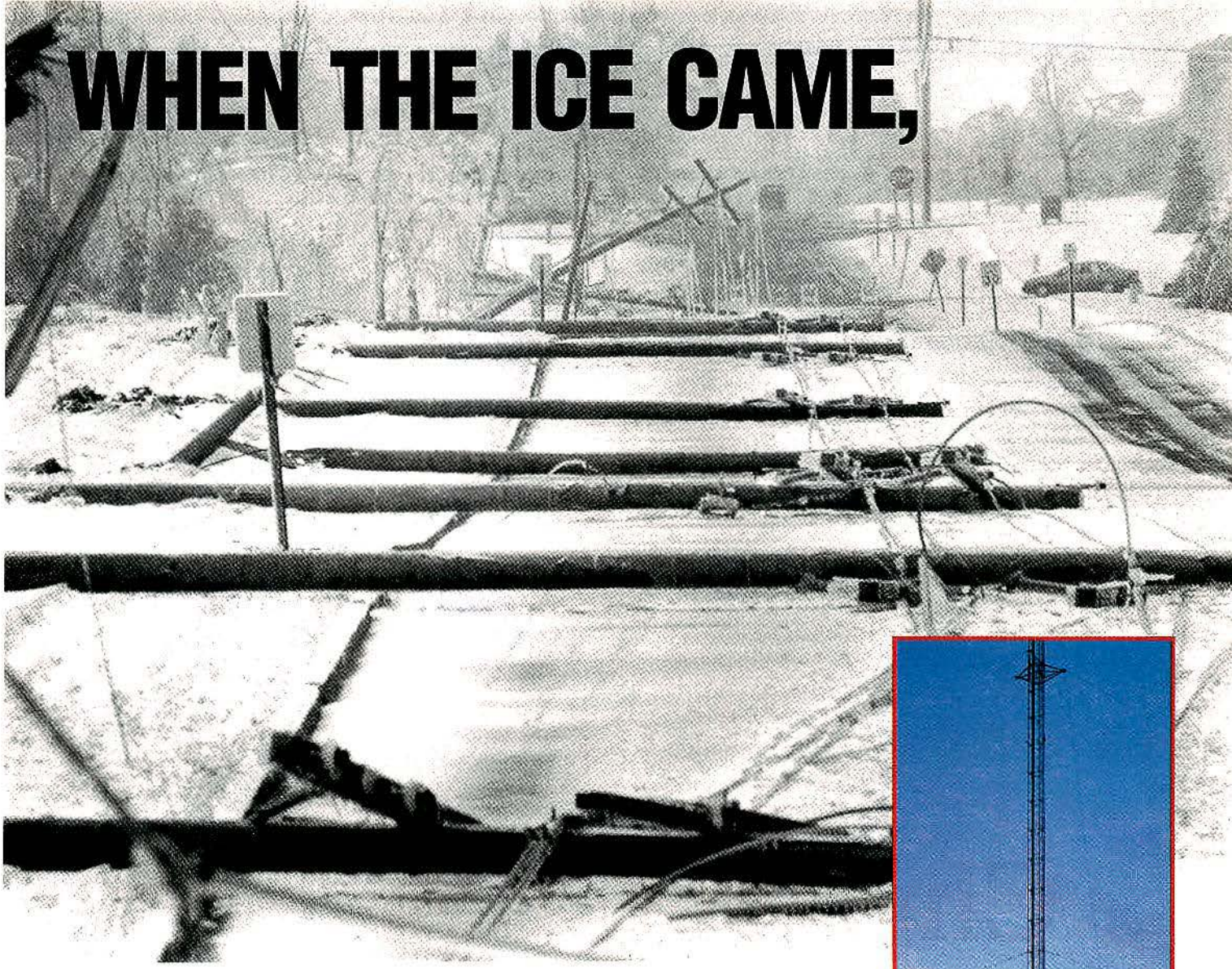


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Fax (219) 936-6796
www.pirod.com

Circle (26) on Fast Fact Card

Directional Couplers — See Wattmeters

Dummy Loads — See Attenuators

Frequency Counters

AEA Div of Tempo Research
AIE
Alcom Electronics
Anritsu
B&K Precision/MAXTEC
Beam Radio
Brunelle Instruments
C&S Sales
Cal-Scope
Cartwright Communications
Contact East
Electronic Products
Elenco Electronics
Fluke
Global Wireless Communication Products
GoComm (formerly Pagerola)
Helper Instruments
HMC-Hub Material
Jan Communications & Electronics
David Levy
Marketronics
MCM Electronics
Metro Tel
Morcom International
Motorola Aftermarket Products
Mouser Electronics
Optoelectronics
Radio Communications Wholesalers
Santa Fe Distributing
Synetcom Digital
TESSCO

Generators, Tone and RF Signal

AEA Div of Tempo Research
AIE
Alcom Electronics
Anritsu
B&K Precision/MAXTEC
Beam Radio
Cal-Scope
Cartwright Communications
CES Wireless Technologies
Contact East
Conway Engineering
Cromack Industries
DH Marketing Manufacturers Representative
Electronic Products
Fluke
Generac
Giga-tronics
HMC-Hub Material
KNS Electronics
David Levy
Marketronics
MCM Electronics
Metro Tel
Monroe Electronics
Motorola Aftermarket Products
Noise Com/Wireless Telecom Group
PMC Assoc
Rohde & Schwarz
Signalcrafters
Synetcom Digital
Talley Communications
Teltone
Vega

Headsets

Accele Electronics
Accutech
ACS Wireless
Adams Distributing
Advanced Cellular of Philadelphia
Aearo
Alltel Supply
AF CommSupply
Auto-Comm Engineering
Beam Radio
Bear Communications
Call One Headsets
Cartwright Communications
Cellnet Communications
Cellular Solutions
CeoTronics
CES Wireless Technologies
Cetacea Sound
Communications & Signals
CommuniTech
Creative Solutions
David Clark
Earmark
Eastcom Industries
Electronic Products
EPCOM
ExCellular Communications
Firecom
General Communications
Global Wireless Communication Products
Hutton Communications
Inwave
Jan Communications & Electronics
Kenwood Communications
Kenwood Systems Group
Marketronics

Now you can have the convenience of a belt clip & protection of a BEE® Case





New from BEE®

Clip-on Cases

Available in Leather or Durus® Nylon

If you love the convenience of a belt clip on your portable, but hate the way plastic always seems to break... BEE® has a solution for you!

Introducing the first belt clip available on a top quality leather or nylon case. Our clip is formed from heavy gauge, heat treated, powder coated spring steel and is securely riveted to the back of the case. You'll never have to worry about radio damage again.

GIVE US A BUZZ 1-800-336-3115

Now your choice of three convenient ways to carry your radio case:

Our new spring steel belt clip mounted on the back of either leather or Durus® cases.

or

Our famous quick disconnect swivel option.

or

Regular snap down belt flap.



Durus®

BEE® PRODUCT DURUS® MADE IN THE U.S.A.

BEE®

2120 Roberts Drive, Broadview, IL 60153
Tel: (800) 336-3115 • Fax: (800) 345-2091
E-Mail: beecase@aol.com



Leather

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Circle (27) on Fast Fact Card

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For more than a decade, BK Radio has designed and manufactured two-way radios that endure the test of time. With our portable and mobile radios, you can rest assured you're getting the best quality, the best features and the best buy. That's because we are committed to building top-notch two-way radios. To ensure that, we build all of our two-way radios in our high-tech manufacturing facility located in West Melbourne, Florida. This 105,000 square foot facility contains the latest in state-of-the-art automated production equipment. To find out more about our two-way radios, call us at 800-648-0947.

BK RADIO
WORLD CLASS RADIOS.™

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West Melbourne, FL 32904
Phone: (407) 984-1414
Fax: (407) 984-0434

A RELM Communications Company

Circle (12) on Fast Fact Card

PCS MICRO FILTER PROTECTION



1.7 to 2.3GHz Frequency Range

dc Blocked

Low VSWR and Insertion Loss

Maintenance Free

Industry's Best RF Performance

Fully Weatherized Housing

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CORPORATION

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Fax (702) 782-4476 • www.polyphaser.com

ISO 9001 CERTIFIED

Circle (13) on Fast Fact Card

Mason Electric
Merry Electronics
Motorola Aftermarket Products
Motorola Land Mobile Products Sector
National Radio
New Eagle International
Noise Cancellation Technologies
Olympic Radio
Otto Communications
Primus Electronics
R-Columbia Products
Radio Communications Wholesalers
Radio Midwest
Radio Wholesale Marketing
RadioMate
Richardson Electronics
Ropex
Santa Fe Distributing
Setcom
Sigronics

SONIC

Sonic Communications
Talley Communications
Telephonics
Television Equipment Assoc
Telex Communications
TESSCO

Insurance

Cellnet Communications
Mountain Communications
The Signal

Intercoms

AAT Communications Systems
Alltel Supply
AF CommSupply
Atkinson Dynamics
Atlas/Soundolier
Auto-Comm Engineering
CeoTronics
Cetacea Sound
David Clark
CP Communications
CSI/Speco
Electronic Products
EPCOM
Fanon Courier
Jan Communications & Electronics
Nady Systems
Newmar
R-Columbia Products
Richardson Electronics
Secom Systems
Setcom
Sigronics
Sound Designers Studio
Talley Communications
Telemobile
Telex Communications

Interconnects, including Message Accounting

AF CommSupply
CES Wireless Technologies
The Communication Express
Connect Systems
Danmax Communication
Data Signal
Falcon Direct
IDA
JPS Communications
Lynn-Arthur Assoc
Olympic Radio
Pacific Circuit Design
Primus Electronics
S-Com Industries
Sigtec America
Subscriber Computing
TESSCO
Trident Micro Systems
Zetron

Inverters and DC-DC converters

Adams Distributing
Alltel Supply
Applied Power
Argus Technologies
Astron
Atlantic Solar Products
Auto-Comm Engineering
Battery Network
Cartwright Communications
Cellular Solutions
The Communication Express
Communications & Signals
Diplomat Comm Systems
Direct Power & Water
Eastcom Industries
Electronic Products
EPCOM
Exeltech
General Communications
Harris/RF Communications Div
Hendry Telephone Products
Hite Electronic Sales
Hutton Communications
ICT
Jan Communications & Electronics
David Levy
Marketronics
MCM Electronics
Motorola Aftermarket Products
Mouser Electronics
Newmar
Photovoltaic Resources International
Power Conversion Products
Primus Electronics
Pulstar Distributing
Radio Communications Wholesalers
Richardson Electronics
Samlex America
Statpower Technologies
Stuart Electronics
Talley Communications
TESSCO
Transportation Safety Devices
Tripp Lite
VDO-PAK
Webster Communications
Wilmore Electronics

Lightning and Surge Protectors

AC Data Systems
Adams Distributing
Alltel Supply
AF CommSupply
Antennaco
Argus Technologies
Auto-Comm Engineering
Beam Radio
Cartwright Communications
Cesco
Citel America
The Communication Express
Communications & Signals

Available in desktop or rackmount configurations.

Handles up to 12 base stations and 2 phone lines with ease.

Supports parallel console operation.



Simply the best small dispatch console available!

This Model 4010 is loaded with features and capabilities that far exceed any small dispatch console in its class. Features that enhance the effectiveness of your dispatch operations and save your department's budget. Call us and see how much capability you can get for so little!

Don't your dispatchers deserve the very best?

Zetron, Inc. PO Box 97004, Redmond WA 98073-9704 USA

Phone: (425)820-6363 Fax: (425)820-7031 Email: zetron@zetron.com Web: http://www.zetron.com

European Office: Zetron, Inc. 27-29 Campbell Court, Bramley, TADLEY, Basingstoke, RG26 5EG, UK Phone: +44 1256 880663 Fax: +44 1256 880491

ZETRON®

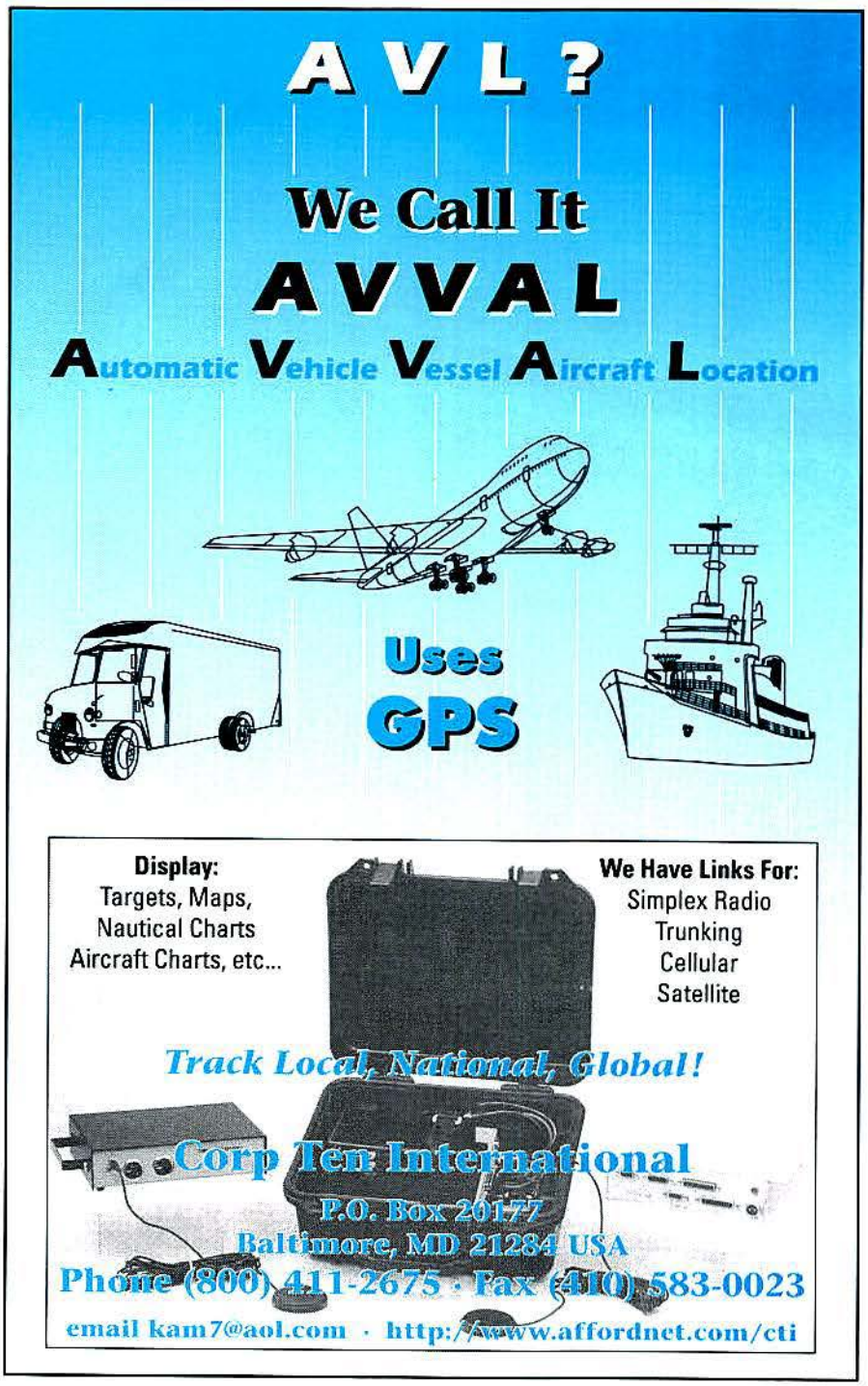
Circle (14) on Fast Fact Card

CommuniTech
Compuquest
Contact East
Cortana
Cushcraft

Cutler-Hammer

EATON

Cutler-Hammer
Davicom Technologies
Delcom Industries
Direct Power & Water
Eastcom Industries
Electro-Comm Dist
Electronic Products
EPCOM
FWT
General Communications
Harger Lightning Protection
HMC-Hub Material
Huber & Suhner
Hutton Communications
ICT
Industrial Communication Engineers
Jackson Telecom
Jan Communications & Electronics
Joslyn Electronics Systems
LBA Technology
David Levy
Liebert
Lightning Deterrent
Lightning Eliminators & Consultants
Lightning Master
Lightning Prevention Syst/WEBTEK
Lyncole XIT Grounding
Manon Engineering
Marketronics
MCG Electronics
MCM Electronics
Motorola Aftermarket Products
Motorola Land Mobile Products Sector
Mouser Electronics
Northern Technologies
PMC Assoc
PolyPhaser
Positron
Precision Tube Coaxitude Div
Primus Electronics
Pulstar Distributing
Richardson Electronics
Samlex America
Scala Electronic
Sinclair Technologies Sinclabs
Stuart Electronics
Talley Communications
TESSCO
Transtector Systems
Tripp Lite
Vir James
Warner Electric (Bristol Plant)
Zetron



Circle (15) on Fast Fact Card

Logging Recorders

AAT Communications Systems
Algo Data Systems
Alltel Supply
Am/Comm Systems
Atis
Auto-Comm Engineering
Bogen Communications
CES Wireless Technologies
Comm-Net 2000 Comm & Mfg
Compuquest
Comverse Information Systems
Dictaphone
Eventide
Fluke
General Communications
GETTECH
JEI
E F Johnson
Magnasync Moviola/Comverse
Manon Engineering
Omnicron Electronics
Phonetix
Racal Recorders
Reproduction Technologies
Seltronics Eyretel
Solid-State Electronics
Spilsbury Communications Div of Racal Canada
Stancil

SmartSTOR®
Logging Recorder for Trunked Radio

Swift Computers
Synetcom Digital
TEAC America
Tekno Industries
Trident Micro Systems
VLR Communications
Zetron

Message Repeaters — Also See Logging Recorders

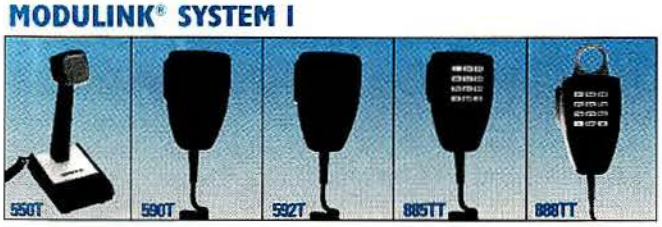
Message Repeaters

CES Wireless Technologies
Comm-Net 2000 Comm & Mfg
Digital Recorders
Eventide

ALL THE RIGHT CONNECTIONS.



MODULINK® SYSTEM 1



550T	590T	592T	885TT	888TT
Transistorized base station with split-bar monitor transmit switch	Transistor amplified dynamic	Electret condenser with noise-canceling pick-up	DTMF with continuous-tone dialing and illuminated keypad	Aircraft DTMF, noise-canceling and FAA certified

Shure ModuLink handheld microphones connect easily to virtually all popular radio transceivers with no hardwiring. Simply snap the correct cordset into the Modulink microphone and the transceiver. And in just 30 seconds, your customer is ready to roll.

Save service time and inventory costs while dramatically reducing down-time. Provide the sound quality and reliability you have come to expect from Shure. Best of all, you'll always have the microphones and cordsets to meet your customers' needs.

For more information on how you can make all the right connections with Shure ModuLink System 1, call 1-800-25-SHURE.

SHURE®

The Sound of Professionals...Worldwide.®

Circle (28) on Fast Fact Card

GETTECH
Olympic Radio
Omnicron Electronics
Racom Products
Radio Communications Wholesalers
Seltronics Eyretel
Spilsbury Communications Div of Racal Canada
Zetron

Microphones

Including Console, DTMF, Ear, Throat, Mobile and Portable

Accele Electronics
Adams Distributing
Andrew
AF CommSupply
Auto-Comm Engineering
Beam Radio
Cartwright Communications
Cellnet Communications
Cellular Solutions
CeoTronics
CES Wireless Technologies
David Clark
Communication Engineers
The Communication Express
Communications & Signals
Data Signal
DTC Communications
Earmark
Eastcom Industries
Electronic Products
EPCOM
ETrunk Systems
General Communications
Global Wireless Communication Products
Harris/RF Communications Div
Hutton Communications
IDA
Inwave
Jan Communications & Electronics
E F Johnson
Kenwood Communications
Kenwood Systems Group
Lett Electronics
David Levy
Manon Engineering
Marketronics
Mason Electric
MCM Electronics
Merry Electronics
Midian Electronics
Motorola Aftermarket Products
Mountain Communications
Nady Systems
National Radio
Otto Communications
Palstar Bramco
Panasonic Communications Systems
PCI-Pekaar Communication
Peiker Acustic
Primus Electronics
R-Columbia Products
Radio Communications Wholesalers
Radio Wholesale Marketing
Richardson Electronics
Ropex
Santa Fe Distributing
Secom Systems
Shure Brothers
Sigronics
Sigtec America

SONIC

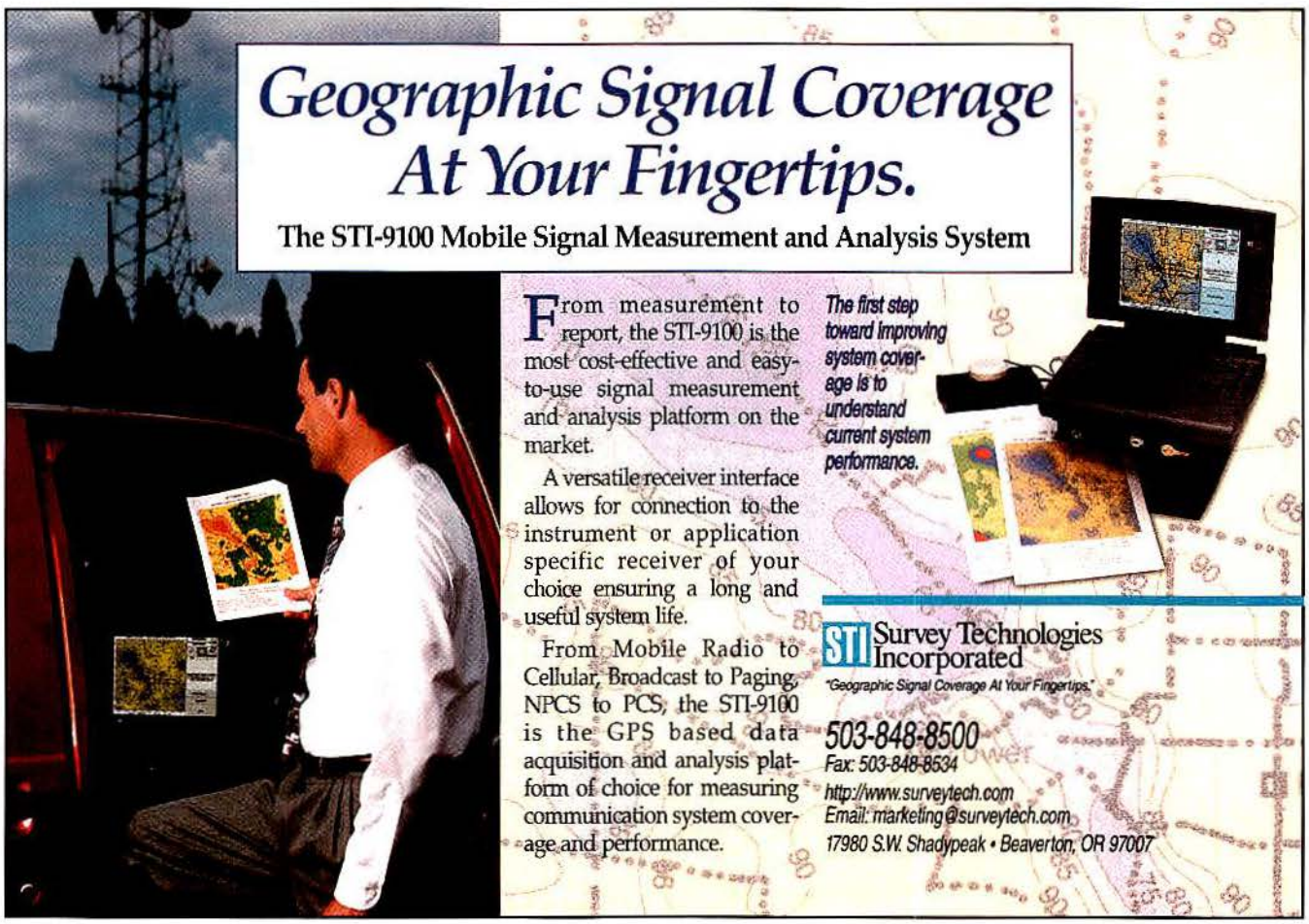
Sonic Communications
Sound Designers Studio
Talley Communications
Telemobile
TelePath
Telephonics
Television Equipment Assoc
Telex Communications
TESSCO
C W Wolfe Communications
Zetron

Microwave Equipment

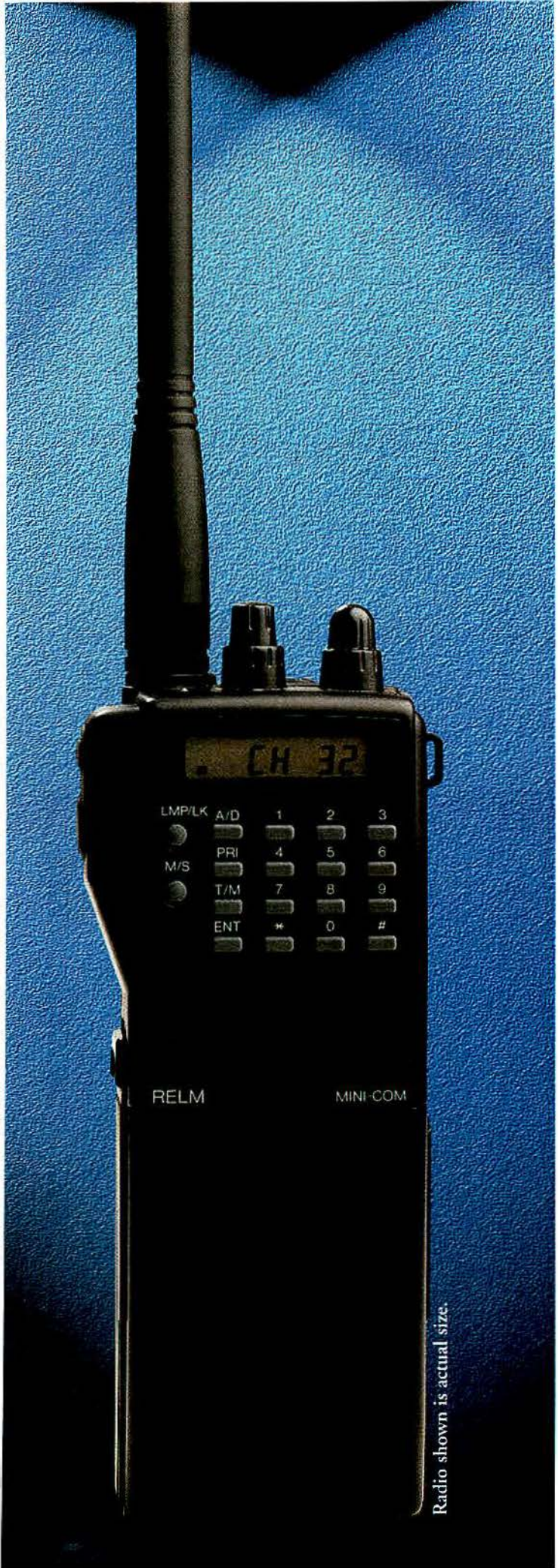
AAT Communications Systems

ATI
ADVANCED TECHCOM, INC.

Advanced TechCom
Alcom Electronics
Alltel Supply
Alpha Industries
Andrew
Anritsu
Astrolab
Auto-Comm Engineering
Beam Radio
Berkeley Varitronics Systems
Cablewave Systems Div (RFS)
California Microwave- Microwave Network Systems
Communications & Signals
Comsat RSI/Jefa Wireless Services
Comsat RSI Wireless Antennas
D&L Communications
Digital Microwave
J Doering Communications
DP Electronics
Electronic Products
Emerson & Cuming Microwave Products
Gabriel Electronics
Giga-tronics
Glenayre Electronics
Glenayre Western Multiplex
Harris, Farinon Div
Hite Electronic Sales
IMT ComSys
Larus
LeBlanc Communications
Lockheed Martin Microwave-Narda
MCM Electronics
Microwave Data Systems
Microwave Radio Digital
Moseley Associates
Nutel Electronics
Olympic Radio
P-Com



Circle (29) on Fast Fact Card



Guess What Keeps Getting Better?

You guessed it! Portable radios from RELM Communications are better than ever. While the new MP Series may look familiar, we've added more channels and features, but kept the same great value you've come to expect. Plus, the MP offers both PC Programming and Cloning capabilities. The MP is available in VHF (136-174 MHz), UHF(403-430 MHz) and UHF (450-480 MHz). Other unique features include:

- 32 Channels (64 Optional)
- Scan
- Priority Scan
- Direct Channel Access
- CTCSS
- DTMF Encode/Decode
- Busy Channel Lockout
- Time Out Timer
- High/Low Power
- Auto Battery Saver
- "Beep" Status
- RCC Mode:
 - 7 digit ANI
 - 11 digit scratch pad

Call us at 800-821-2900 for your nearest dealer!

RELM™
COMMUNICATIONS

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West Melbourne, Florida 32904
407-984-1414
407-984-0434

Circle (30) on Fast Fact Card

Peninsula Wireless Communications
Primus Electronics
Richardson Electronics
SFA
Simulcast Solutions
SmartLink Development L P
Talley Communications
Telephonics
Tower Structures
TWR Communications/Lighting
TWR Telecom

Mobile Data Systems and Message Switches

ADS Advanced Digital Systems
Aisin World Corp of America
American TriTech
Andrew
Baytech
Beam Radio
Braley Communication Systems
CES Wireless Technologies
Cetacea Sound
Coded Communications
Comm-Tech International
D&L Communications
Data Express
DataBurst Technologies
Dataradio
Dinet
Eastcom Industries
ElectroCom Communication Systems
EPCOM
General Communications
Geotek Communications
Hark Systems
Harris/RF Communications Div
IDA
Information Radio Technology
Integrated Computer Concepts
E F Johnson
Kensington & Icknield
King Communications USA
Lucent Technologies
MaSys
MDSI Mobile Data Solutions
Mentor Engineering
Metric Systems
Metroplex Mobile Data
Modems Plus
Motorola-IDEN Group
MX-COM
Navigation Data Systems
OCS Technologies
PRC Public Sector
PSI International
Public Safety Systems (PSSI)
Radio Communications Wholesalers
Real Time Strategies
Sigtec America
Solid-State Electronics
Synetcom Digital
Syntonic
Tekno Industries
Telecommunications Engineering Associates
Tiburon
US West Public Safety Group
The Warner Group
Zebryk Engineering
Zetron

Mobile Data Terminals

ADS Advanced Digital Systems
Air Comm
Andrew
Auto-Comm Engineering
Beam Radio
Cellport Labs
Cerulean Technology
Cetacea Sound
Coded Communications
Comm-Tech International
CES Wireless Technologies
CompuSPEAK
Corp Ten International
D&L Communications
Data Express
DataBurst Technologies
Datron World Communications
Dinet
Diplomat Comm Systems
Eagle Wireless International
Eastcom Industries
ElectroCom Communication Systems
General Communications
Geotek Communications
Harris, Farinon Div
IDA
IMT ComSys
Itron
Kensington & Icknield
King Communications USA
Marketronics
Mentor Engineering
Metroplex Mobile Data
METS
Mobile Data Communications
Modems Plus
Motorola-IDEN Group
Navigation Data Systems
Norand
Onsite Instruments
PacComm Packet Radio Systems
PRC Public Sector
Radio Communications Wholesalers
Secom Systems
Sigtec America
Solid-State Electronics
Spillman Data Systems
Synetcom Digital
Talley Communications

WirelessLINKS INC.

Wireless Links
Zebryk Engineering
Zetron
Zirco

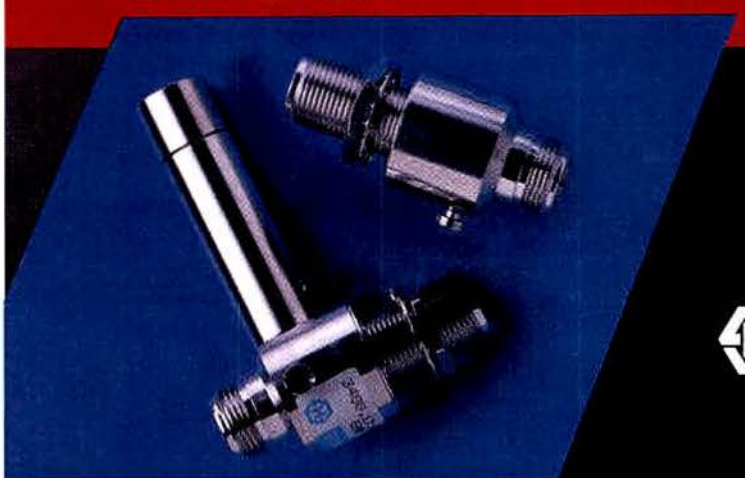
Mobile Satellite Equipment

AML Communications
Andrew
CES Wireless Technologies
Cetacea Sound
Comsat RSI/Jefa Wireless Services
Eagle Wireless International
ExCellular Communications
IMT ComSys
Jan Communications & Electronics

HUBER+SUHNER INTRODUCES:

NEW Lightning Protectors With Integrated High Pass Filters

- λ/4 and gas capsule versions from stock
- λ/4 residual energy (less than 8 nJ) reduced by factor of 600
- DC blocking of inner conductor at protected side
- Gas capsule residual energy (less than 90 µJ) reduced 85%
- Current handling up to 100 kA



For greater reduction in residual voltage and energy, rely on Huber+Suhner's newest lightning protectors with integrated high pass filters. Available with either λ/4 shorting stub or surge arrestor capsules, their reliability and performance are unmatched. Rely on Huber+Suhner for the most rugged, stable lightning protectors in the market.

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TEL: 802-878-0555 FAX: 802-878-8880
110-1140 Morrison Dr., Ottawa, Canada
TEL: 613-596-6846 FAX: 613-596-3001
Offices Worldwide

www.hubersuhnerinc.com

LIGHTNING PROTECTORS

Circle (31) on Fast Fact Card

CONNECT WITH THE BEST

Cablewave Systems ISO 9001 Certified.







- Ultra directive high performance microwave parabolic antennas
- Dual polarized / single polarized microwave parabolic antennas
- Standard series / low VSWR microwave parabolic antennas
- 2 GHz coaxial feeds
- 3 to 23 GHz waveguide feeds
- FLEXWELL® coaxial cables, elliptical waveguides, and rigid transmission lines
- Coaxial cable and elliptical waveguide R.F. connectors
- Installation accessories
- Pressurization equipment

RFS Radio Frequency Systems, Inc.
Cablewave Systems Division

Cablewave Systems
60 Dodge Ave.
North Haven, CT 06473
☎ (203) 239-3311
FAX (203) 234-7718

Circle (43) on Fast Fact Card

JPS Communications
Kensington & Icknield
Lunar Industries
Magnavox Electronic Systems
Marketronics
Morcom International
Telemobile
Torfino Enterprises

Mobile and Portable Telephones

AdvanceTec Industries
Alger Telecom
Audiovox
Auto-Comm Engineering
Barnett Electronics
Beam Radio
Cellnet Communications
D&L Communications
Danmax Communication
Delcom Industries
Ericsson
General Communications
Hite Electronic Sales
Inmetco
Jan Communications & Electronics
E F Johnson
Kenwood Communications
Kenwood Systems Group
MACAW Electronics
Magellan Systems
Magnavox Electronic Systems
Marketronics
Morcom International
Motorola-IDEN Group
Mountain Communications
NEC America
NSI Communication
Optaphone Systems
Palstar Bramco
Peiker Acustic
Positron
R-Columbia Products
RTX
Sharp Communication
Smith Communications Service
Super Wireless Warehouse
Tatung Telecom
Technophone
Telemobile
TelePath
Television Equipment Assoc
TESSCO

uniden®

UNIDEN-Private Radio Comm's
Viziflex Seels
Wetec Electronics
C W Wolfe Communications
World Technical Services

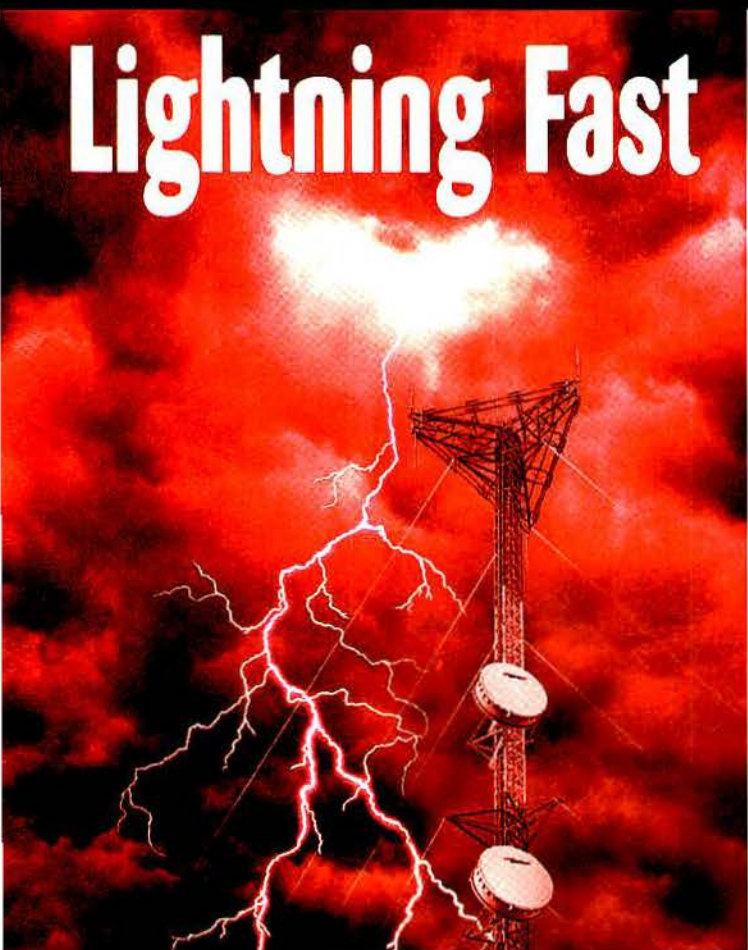
Mobile Telephone Systems Equipment

Aerotron-Repco Systems
Andrew
Auto-Comm Engineering
Beam Radio
Berkeley Varitronics Systems
Bogen Communications
Braley Communication Systems
Carlson Communications
CES Wireless Technologies
Comm-Net 2000 Comm & Mfg
Comsat RSI/Jefa Wireless Services
CTI
D&L Communications
Danmax Communication
Dataprobe
Direct Power & Water
ESA Telecommunications
Hark Systems
Harris Canada Wireless Access Div
Hite Electronic Sales
Hutton Communications
IMT ComSys
Jan Communications & Electronics
E F Johnson
JPS Communications
LeBlanc Communications
Marketronics
Modular Communication Systems
Motorola-IDEN Group
Optaphone Systems
Peninsula Wireless Communications
Positron
Ranger Communications
RTX
Santa Fe Distributing
Super Wireless Warehouse
Synetcom Digital
Talley Communications
Tatung Telecom
Tekno Industries
Telemobile
TESSCO
TWR Communications/Lighting
UNIDEN-Private Radio Comm's
World Technical Services
Zetron

Modems, RF

ADS Advanced Digital Systems
Advanced Electronic Applications
Advanced Electronics
Aerotron-Repco Systems
Alltel Supply
Auto-Comm Engineering
Barnett Engineering
Beam Radio
Berkeley Varitronics Systems
Codan
Crescent Radio Electronics
Jack Daniel
Data Express
DataBurst Technologies
Dynatek Communication Dist
EPCOM
ExCellular Communications
GLB Electronics
Glenayre Western Multiplex
Hamtronics
Harris, Farinon Div
IMT ComSys
E F Johnson
Marconi Instruments
Marketronics
MCM Electronics
Megadata
Metric Systems

Pretensioned grounding strap makes lightning protection a snap



Protection



Protect your system with the new, fast-to-install, reliable SureGround™ grounding kit from Andrew.

The one-piece strap snaps tightly around the cable's outer conductor and secures with a built-in locking clip. Exact contact pressure every time. No tools. No lost hardware. Done in no time.

SureGround kits save money and last years longer. Kits are fully tested to withstand the most severe lightning strikes. The IEC 1024-1-compliant solid copper ground lead reduces dc resistance and lowers impedance so lightning chooses SureGround and not your cable.

With SureGround, you can weather any storm with confidence.

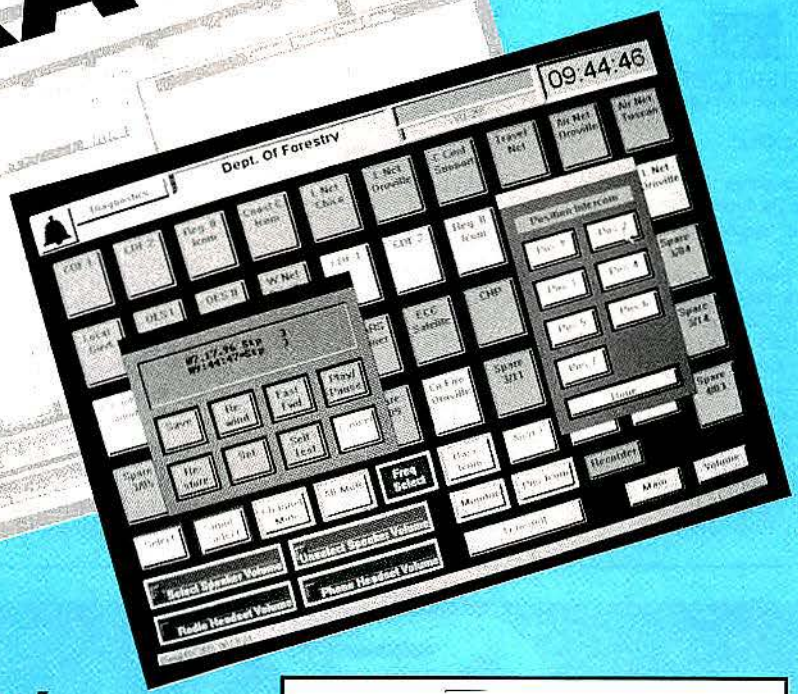
For more details, call Andrew or your local Andrew Distributor today.

1-800-255-1479 ext. 293 or
Fax us at 1-800-349-5444
Visit our Web Site at
http://www.andrew.com

ANDREW®
In a Communicating World, Andrew Is Everywhere

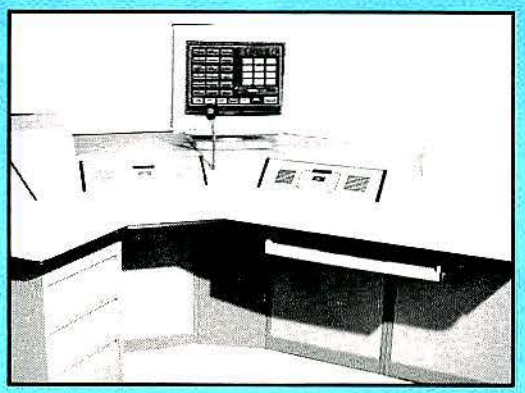
Circle (44) on Fast Fact Card

The New ULTRA-COM NT



Windows-Based Radio Dispatch Console System

...offering more built-in programmability than any other system



The Windows-based Ultra-COM NT is the only communications workstation that lets you design screens to your specific operating requirements, with no changes to software and no re-programming costs.

The Ultra-COM NT's design whether stand-alone or as part of multi-position consoles sharing common electronics, takes advantage of the latest advances in computer technology through the use of CPLDs (Complex Programmable Logic Devices), and DSP (Digital Signal Processors) to provide precision audio filtering and routing.

In addition to the exclusive "Screenmaker" and "Customizer" programs, the new "MEDIC" diagnostic program provides extensive diagnostic tests to identify hardware and software problems, *and recommends corrective action.*

Moducom NT dispatch consoles, with Windows-based technology, are designed for today's emergency communications requirements - and for the future.

MODULAR COMMUNICATION SYSTEMS, INC.

13309 Saticoy St., No. Hollywood, CA 91605
(818) 764-1333 / Fax (818) 764-1992
www.moducom.com

Windows NT is a Trademark of Microsoft Corporation

Circle (45) on Fast Fact Card

Metroplex Mobile Data
Microwave Data Systems
Modems Plus
Monicor Electronics
Morcom International
Moseley Associates
Motorola-IDEN Group
MX-COM
Neulink (Div of RF Industries)
Nutel Electronics
PacComm Packet Radio Systems

PACIFIC CREST CORPORATION

Pacific Crest
PCSI
RF Industries
Santa Fe Distributing
Secom Systems
SFA
Solid-State Electronics
SONIK Technologies
Summit Telecommunications
Synetcom Digital
Talley Communications
Telemobile
TelePath
VSI Cat Comm International
Wireless Telecom
World Communications Group
World Technical Services
Zebryk Engineering

Modulation Deviation Meters — See Service Monitors

Mounts and Mounting Hardware

ABM Communications
Adams Distributing
American Towers & Structures
Andrew
Antenex
AF CommSupply
Antennaco
The Antenna Company
Applied Power
Audiovox
Auto-Comm Engineering
Beam Radio
Cartwright Communications
Cellular Enterprises
Cellular Solutions
Cellular Wholesalers
Celwave
Cesco
The Clip
Comark Distributing
The Communication Express
Comsat RSI Wireless Antennas
Cruisers/Div of RCI
Decibel Products
Delcom Industries
Destin Thomas Products
Direct Power & Water
E Tip
Eastcom Industries
Electronic Products
Gabriel Electronics
Gamber-Johnson
Gemini Industries
General Communications
Hartford Concrete Products
Havis Shields Equipment
Hutton Communications
JB Communications
Jon/Beau
Jotto Desk
LeBlanc Communications
David Levy
Lund Industries
Marketronics
MCM Electronics
Modems Plus
Motorola Aftermarket Products
Mounting Solutions
New-Tronics Antenna
Fred A Nudd
Olympic Radio
Onsite Instruments
PanaVise Products
Primus Electronics
Pro-Fit International
Pulstar Distributing
QM Enterprises
Radio Wholesale Marketing
Santa Fe Distributing
Scientific Dimensions
Site Advantage
SMC Advanced Products
SPJ Furniture Technology
Stealth-Cellular IC
Stellar Communications
Talley Communications
TCC Industries
TESSCO
Tower Structures
Transportation Safety Devices
Troy Products
TWR Communications/Lighting
Valmont/Microflect
The Winsted
Zero Stantron

Packet Radio Equipment

ADS Advanced Digital Systems
Advanced Electronic Applications
B&C Communications
Beam Radio
CES Wireless Technologies
Comarco Wireless Technologies
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DataBurst Technologies
GLB Electronics
E Gracey Electronics
GRE America
E F Johnson
Kensington & Icknield
LOCSYS
Metric Systems
Metroplex Mobile Data
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PageTap
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Zebryk Engineering

Pagers

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Adams Distributing
Advanced Cellular of Philadelphia
Advanced Electronics
Air Comm
Auto-Comm Engineering
B&C Communications
Beam Radio
Bear Communications
Bogen Communications
Buy-Comm
Cellnet Communications
Cellular Wholesalers
CES Wireless Technologies
Communication Engineers
Crystronics
Cue Paging
D&L Communications
Danmax Communication
Delcom Industries

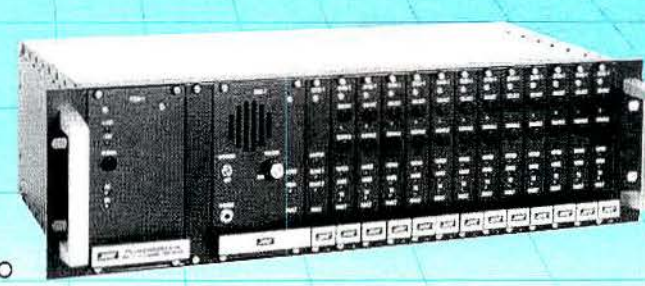
DuraComm

DuraComm
EPCOM
Everon America
ExCellular Communications
Falcon Direct
Fourth Dimension Industry
General Communications
Global Wireless Communication Products
GoComm (formerly Pagerola)
ICM Communications
Indyme
Inmetco
Intercontinental Marketing
Jan Communications & Electronics
Leavitt Communications
Lett Electronics
Linktronic Systems
M&M Communications
Marketronics
Maxon America
MCM Electronics
McManus Communications
Mechem Electronics
MobileComm
Morcom International
Motorola Advanced Messaging Group
Motorola
Mountain Communications
NATCOM (Kern Pager Repair)
National Pager Services
NEC America
Nexacomm International
Oklahoma Radio Systems
Olympic Radio
BearCom LP
Wireless Technologies Group
PageMart Wireless
PageRepair
Pana-Pacific
Panasonic Communications Systems
The Radio Communications Group
Radio Communications Wholesalers
Radio Midwest
Radio Wholesale Marketing
Reach Electronics
Samsung Telecommunications America
Secom Systems
Service Alert
Shinwa Communications of America
Smith Communications Service
Socket Communications
Super Wireless Warehouse
Technostores
TelePath
TESSCO
VCP International
Visiplex
Vista Communications
Wetec Electronics
Wireless Telecom
Wisco International
C W Wolfe Communications
World Technical Services

Paging Specialties and Accessories

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Anchor Graphics
Auto-Comm Engineering
AW Enterprises
Beam Radio
BEE Electronics
Bogen Communications
Canamex Communications
Cellnet Communications
CES Wireless Technologies
Compuquest
Crescent Radio Electronics
Crystronics
D&L Communications
Danmax Communication
DW Electrochemicals
Eastcom Industries
EZ Soft Business Software/EZ Pager
Falcon Direct
Fanon Courier
Genave/NRC
GoComm (formerly Pagerola)
Hark Systems
Hutton Communications
Indyme
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- ✓ Automatic Transmit Steering.
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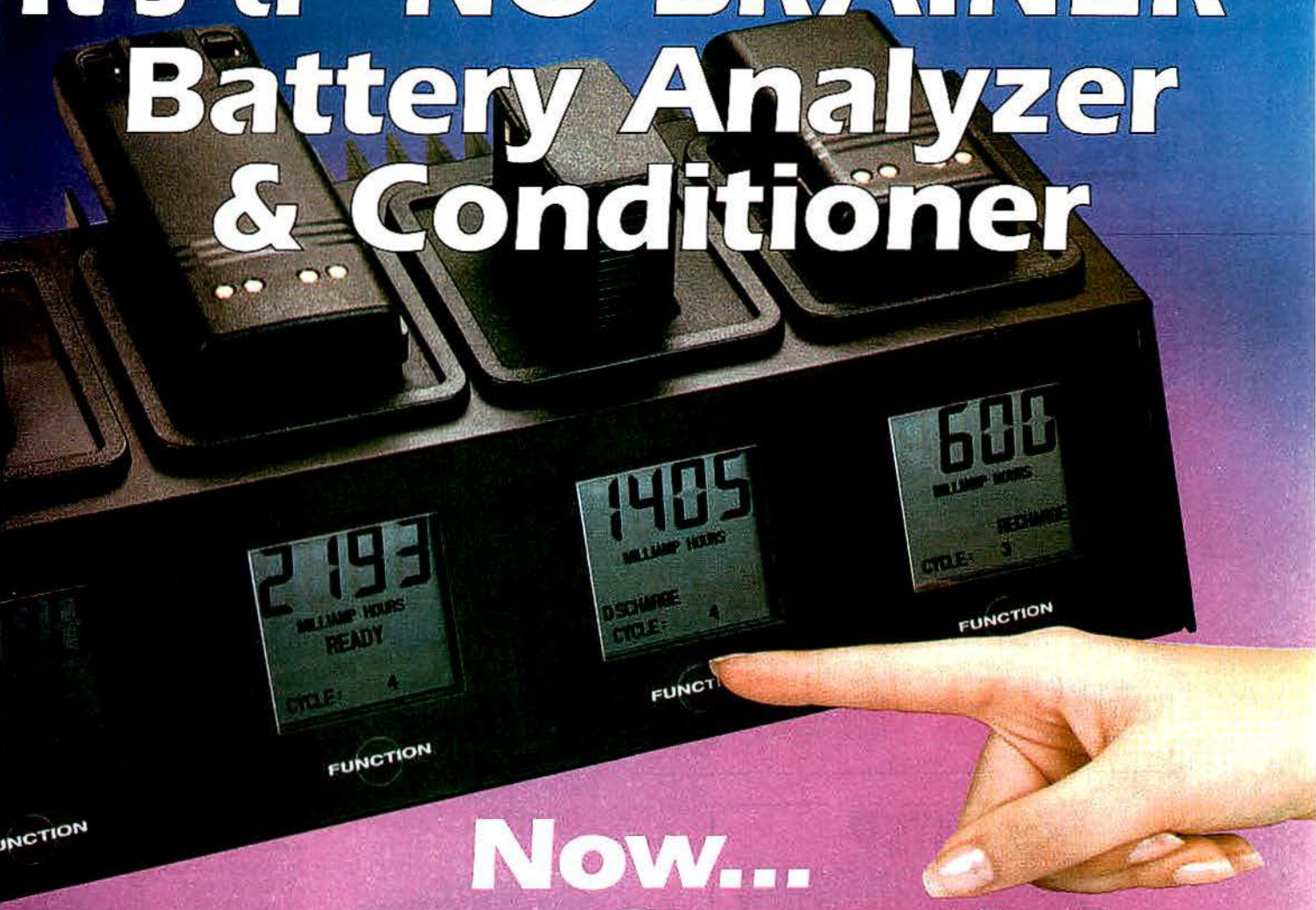
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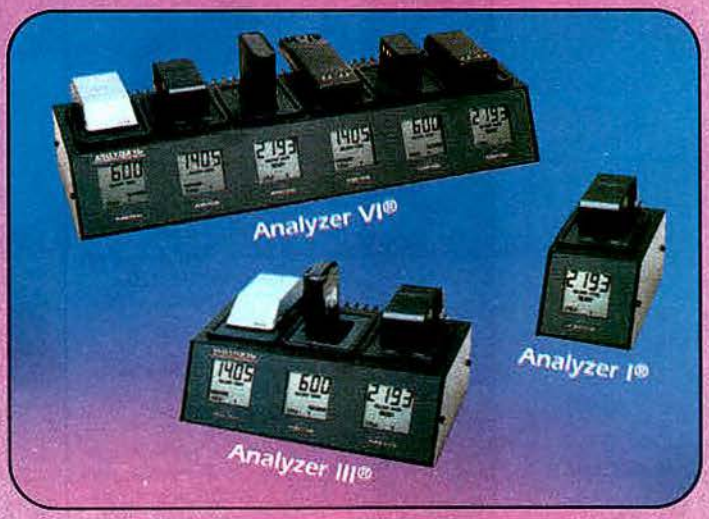
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Mountain Communications

Multiplier

Multiplier Industries
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NEC America
Nexacomm International
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PacComm Packet Radio Systems
BearCom LP
Wireless Technologies Group
PageMart Wireless
PageRepair
PageTap
PMI Marketing
Polaris Industries
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Real Time Strategies
Service Alert
Smith Communications Service
Statistical Control Systems
Super Wireless Warehouse
Talley Communications
TESSCO
Transtector Systems
VCP International
Visiplex
Vista Communications
Wireless Telecom
World Technical Services
Zetron

Paging Terminals

Adams Distributing
Advanced Electronics
Auto-Comm Engineering
B&C Communications
Beam Radio
Bogen Communications
CES Wireless Technologies
Commonwealth Communications Industries
Communication Engineers
The Communication Express
Compuquest
CTI
Danmax Communication
DH Marketing Manufacturers Representative
Eagle Wireless International
Enhanced Systems
EPCOM
ESA Telecommunications
Escotel Software
Freeman Engineering
Glenayre Electronics
ICM Communications
Indyme
Jan Communications & Electronics
Leavitt Communications
Linktronic Systems
Manon Engineering
Marketronics
Maxon America
Mechem Electronics
Morcom International
Motorola Advanced Messaging Group
Mounting Solutions
NATCOM (Kern Pager Repair)
Olympic Radio
PageMart Wireless
Paging Products International
Prism Telecom Div TGA Technologies
Radio Communications Wholesalers
Ramsey Electronics
Reach Electronics
Real Time Strategies
Service Alert
Smith Communications Service
Statistical Control Systems
TekNow
Telelink Communications
VCP International
Visiplex
Vista Communications
Wisco International
World Technical Services
Zetron

Paging Transmitters

Adams Distributing
Advanced Electronics
Aerotron-Repco Systems
AML Communications
Auto-Comm Engineering
Barnett Electronics
B&C Communications

BR
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Celwave
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Eagle Wireless International
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General Communications
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Morcom International
Motorola Advanced Messaging Group
NATCOM (Kern Pager Repair)
Olympic Radio
BearCom LP
Paging Products International
Prism Telecom Div TGA Technologies
Ramsey Electronics
Ranger Communications
RF Industries
RF Technology
Scott Communications
Service Alert
Smith Communications Service
SONIK Technologies
Spectrum Communications
Tait Electronics
TelePath
VCP International
Visiplex
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Parts

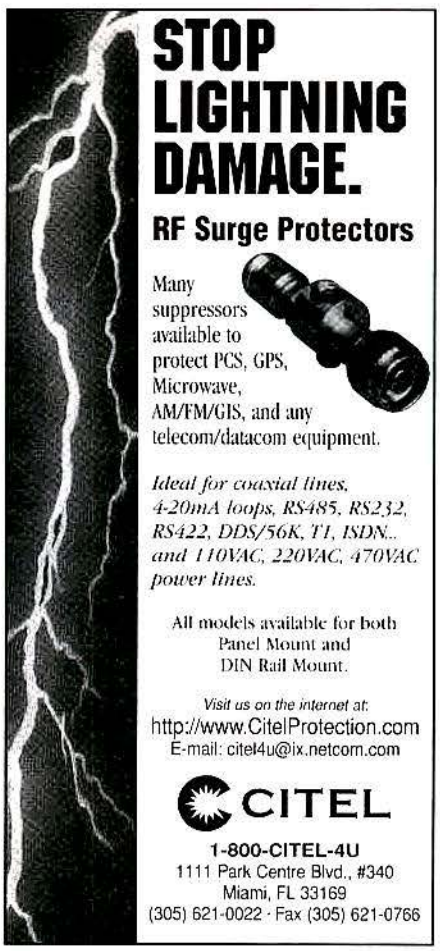
Advanced Electronics
Comark Distributing
Comm-Net 2000 Comm & Mfg
Delcom Industries
EPCOM
ExCellular Communications
General Communications
Jan Communications & Electronics
E F Johnson
Lockheed Martin
L-3 Communications Narda Microwave-West
Lett Electronics
David Levy
Marketronics
Motorola Aftermarket Products
Motorola Land Mobile Products Sector
Mountain Communications
Mouser Electronics
NEC America
Palstar Bramco
Radio Wholesale Marketing
Santa Fe Distributing
Site Advantage
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Transportation Safety Devices
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Power Supplies

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Acopian Technical
Adams Distributing
Advanced Cellular of Philadelphia
Advanced Receiver Research
AdvanceTec Industries
AF CommSupply
Applied Power
Argus Technologies
Astron
Auto-Comm Engineering
B&K Precision/MAXTEC
Battery Network
Benelec
Best Power (a unit of General Signal)
C&S Sales
Cal-Scope
Cartwright Communications
Cellular Solutions
Celwave
Codan
Comark Distributing
The Communication Express
Comsat RSI/Jefa Wireless Services
Contact East
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CSI/Speco
CSS Power
Delcom Industries
Diplomat Comm Systems

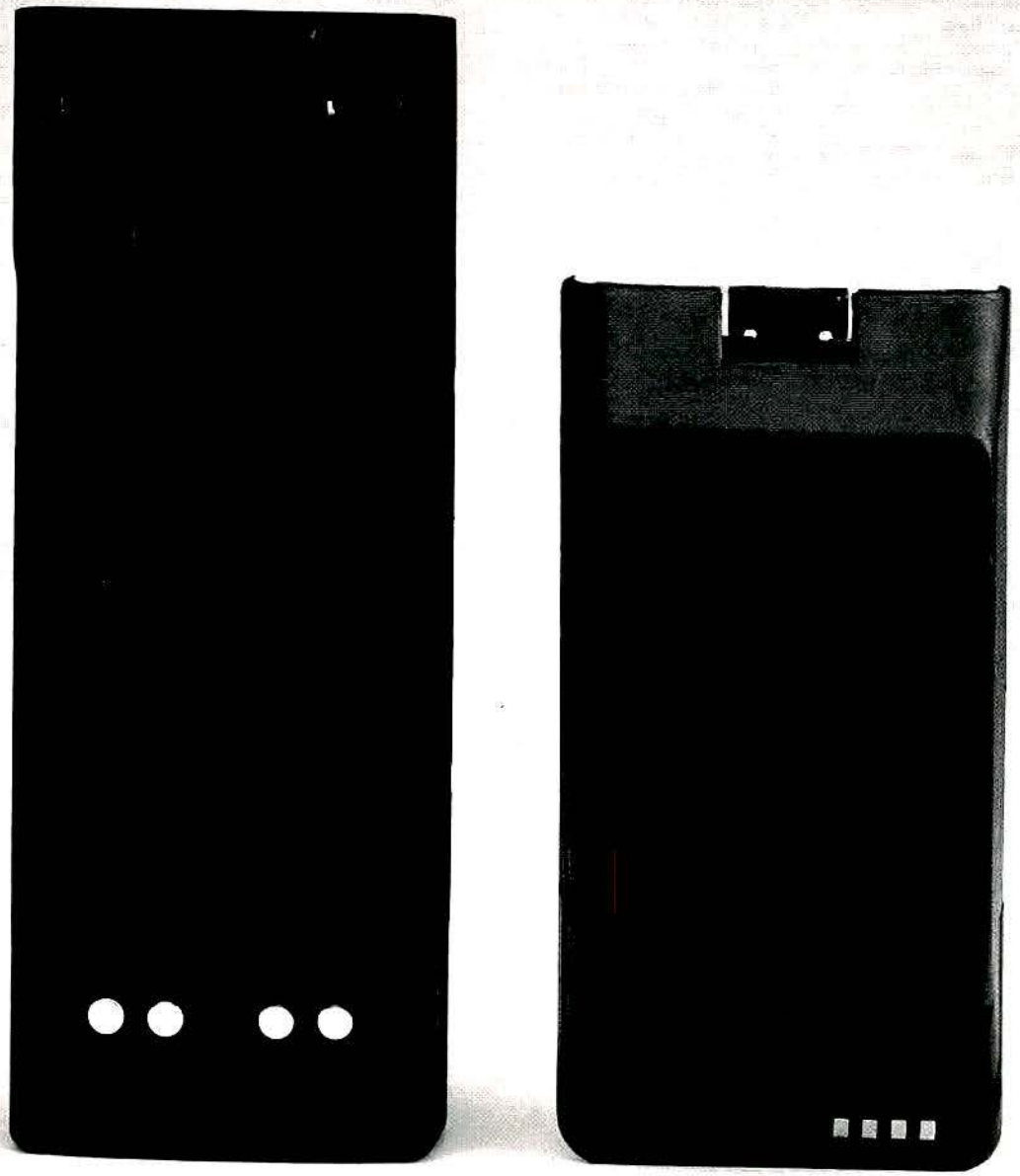
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Hutton Communications
ICT
Imark
Inwave
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Lett Electronics
David Levy
Liebert
Marketronics
MCM Electronics
Meirick
Motorola Aftermarket Products
Mouser Electronics
NATCOM (Kern Pager Repair)
Newmar
Olympic Radio
Peninsula Wireless Communications
Power Conversion Products
Primus Electronics
Pulstar Distributing
QM Enterprises
Radio Communications Wholesalers
Radio Wholesale Marketing
Samlex America
Santa Fe Distributing
Secom Systems
Sharp Communication
Sinclair Technologies Sinclabs
Spectrum Communications
Sunelco
Talley Communications
TCC Industries
TESSCO
TPL Communications
Transportation Safety Devices
Tripp Lite
Unplugged Communications
VDO-PAK
VoCom Products
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Warner Electric (Bristol Plant)
Webster Communications
Wilmore Electronics
Wisco International
C W Wolfe Communications
World Technical Services
Zirco

Preselectors — See Antenna Site Equipment

Programmers, NAM, PROM and Others

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Cetacea Sound
Curtis Electro Devices
EPCOM
ETrunk Systems
ExCellular Communications
HMC-Hub Material
Mechem Electronics
NATCOM (Kern Pager Repair)
Nexacomm International
Polaris Industries
The Radio Communications Group
Roadrunner Communications
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Imark
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Olympic Radio
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Sound Designers Studio
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Radios — See Repeaters, Transceivers

Recorders — See Logging Recorders

Recorders

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Compuquest
Comverse Information Systems
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Richardson Electronics
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TEAC America
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Advanced Electronic Applications
AIMS Technologies
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Alligator Communications
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B&C Communications
Beam Radio
Bear Communications
Berkeley Varitronics Systems
Capital Area Communications
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Hamtronics
Hutton Communications
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JPS Communications
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JPS Communications
King Communications USA
Manon Engineering
Marketronics
Nida
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- Cellular
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- IVDS
- SMR
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- PACS
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Portable Signal Strength Meter



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TESSCO
Transcrypt International
UNIDEN-Private Radio Comm's
Wisco International
C W Wolfe Communications
World Technical Services
Zetron

Repeaters

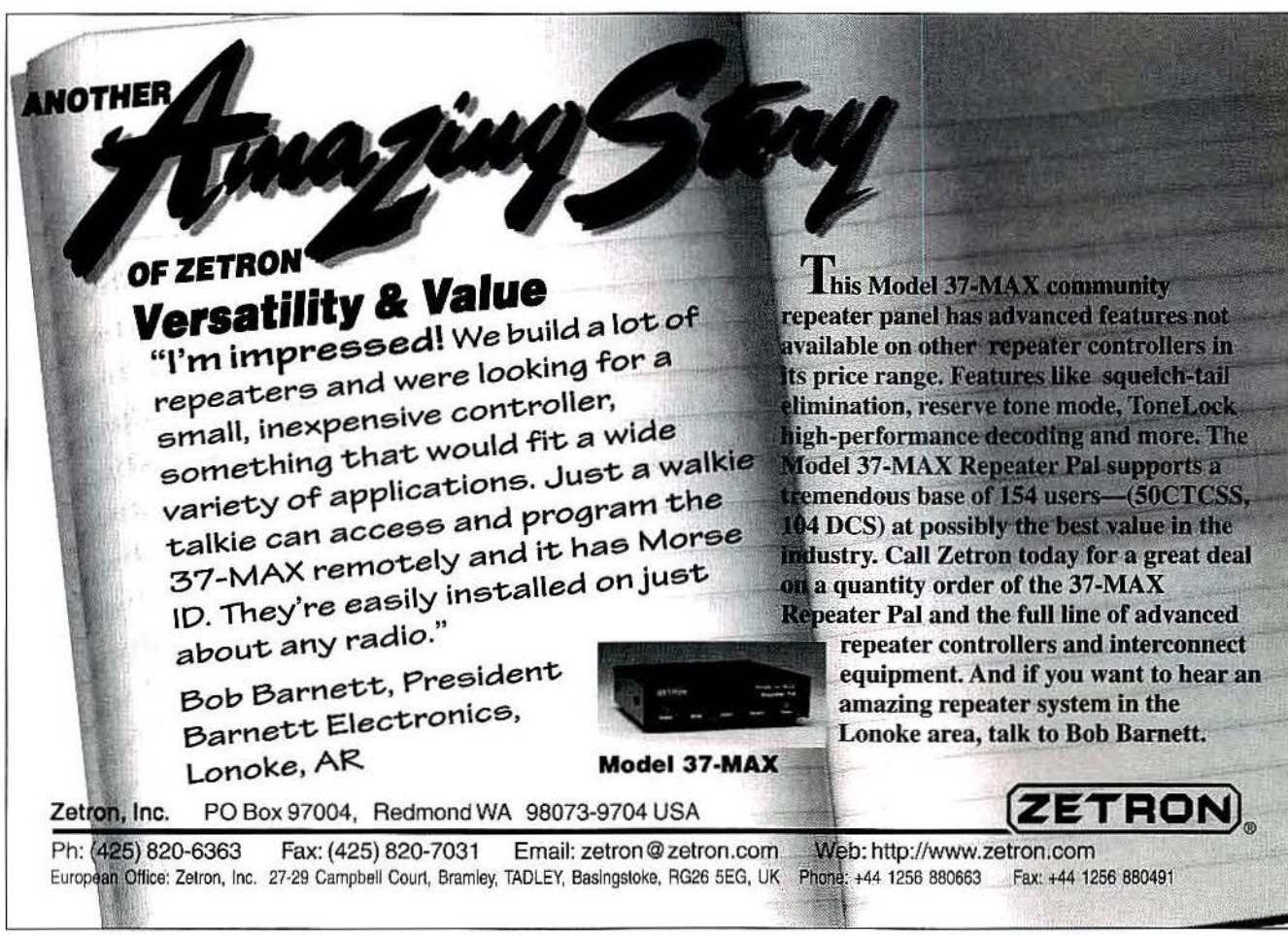
B Base; C Crossband; M Mobile
P Portable

Adams Distributing BCMP
ADS Advanced Digital Systems BM
Air Comm BMP
Allen Telecom BM
AML Communications B
Auto-Comm Engineering BCMP
Barnett Electronics BM
B&C Communications BCMP
Beam Radio BCMP
Bear Communications BCM
BK Radio **BCMP**
California Radio BCM
Cellular Solutions P
Celwave **BC**
Comm-Net 2000 Comm & Mfg CM
Communication Engineers ... BCMP
Communications & Signals .. BCMP
D&L Communications MPB
D&R Associates BCMP
Daniels Electronics BCMP
Danmax Communication BCMP
Dataradio **M**
Delcom Industries BMP
Diplomat Comm Systems M
DX Radio Systems BC
Eagle Wireless International B
Earmark BCP
EPCOM BMP
Ericsson BMP
ETrunk Systems B
ExCellular Communications BMP
Falcon Direct BCMP
Futurecom Systems Group . BCMP
Gabriel Electronics **B**
General Communications BCMP
Global Wireless Communication Products BCMP
Haewa Communications BCMP
Hamtronics BCMP
Hite Electronic Sales BCMP
IDA **C**
Imark BCMP
Inmetco MP
Jan Communications & Electronics BCMP
E F Johnson BCMP
JPS Communications **BCMP**
Kenwood Communications **BCMP**
Kenwood Systems Group
King Communications USA BC
Lett Electronics MP
LGP B
M&M Communications B
Magellan Systems MP
Manon Engineering BCMP
Marketronics **BCMP**
Mechem Electronics BCMP
Monicor Electronics BP
Morcom International BCMP
Mountain Communications P
National Radio BMP
NEC America MP
Neulink (Div of RF Industries)
Nida BCMP
NSI Communication B
Olympic Radio BCMP
Ortel B
BearCom LP B
Paging Products International B
PCI-Pekaar Communication BP
Pliceon M
Powerwave Technologies BC
Pyramid Communications CM
Radio Communications Wholesalers BCP
Radio Systems CMPB
Radio Wholesale Marketing MP
Ranger Communications BCMP
RELM Communications **BCMP**
Repeater Technologies B
RF Technology B
Ritron BMP
SEA B
Secom Systems BCMP
Sentry Services International BM
Shinwa Communications of America MP
Skyline Radio MP
SmartLink Development L P CB
Smith Communications Service ... B
Spectrum Communications **BCP**
Spilsbury Communications Div of Racal Canada BMP
Standard Communications/Land Mobile Div BM
Super Wireless Warehouse **MP**
SWS Security CMP
Tait Electronics BCMP
Telemobile BCMP
TelePath BCMP
Teletec BCMP
Vertex Radio Communications **BMP**
Webster Communications CP
Wisco International BMP
C W Wolfe Communications BCMP
World Technical Services BMP

RF Filters — See Antenna Site Equipment

Rural Radio Telephone Systems

Carlson Communications
CES Wireless Technologies
CTI
DataCom Systems
DX Radio Systems
EPCOM
GLB Electronics
GRE America
Hark Systems
Harris Canada Wireless Access Div



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THE NEW IFR COM-120B, AHEAD OF THE CURVE

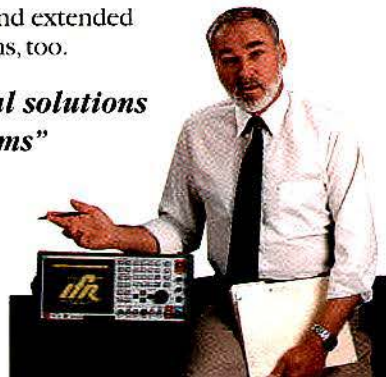
Predicting tomorrow's technology is a difficult road to travel. But with the new generation COM-120B, you don't need road signs to predict the twists and turns of wireless communications testing. With its field proven performance and incorporating over a dozen new innovations, the COM-120B easily negotiates the course of wireless testing.

Straight away, you'll experience the blazing speed of the upgraded microprocessor. The new graphics system provides the flexibility to display customized test results. And for more demanding test and configuration requirements, the COM-120B has an independent functioning tracking generator, that allows simultaneous sweeps of two sets of RF frequencies.

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RF Links

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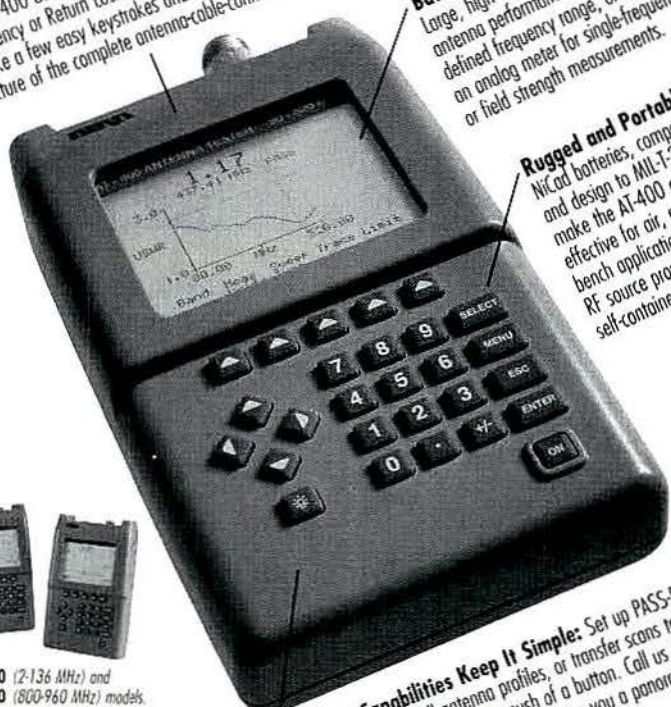
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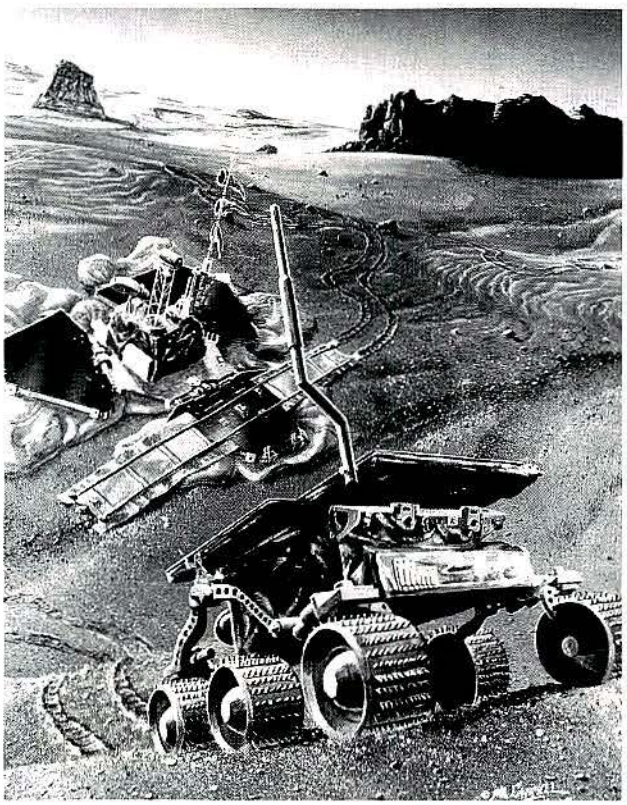
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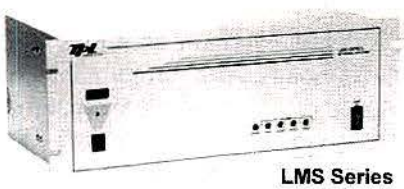
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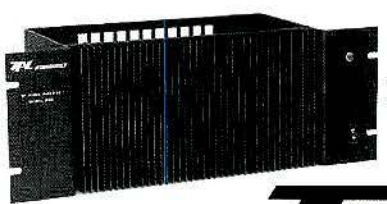
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Bird Electronic
C&S Sales
Compuquest
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E A G L E
Elenco Electronics
Giga-tronics
E Gracey Electronics
Helper Instruments
Hite Electronic Sales
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MFJ Enterprises
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Talley Communications
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Telephonics
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TCXOs — See Channel Elements

Telephone Line Test Meters

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HM Electronics Battery Systems Div
HMC-Hub Material
Hutton Communications
IFR Systems
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Jensen Tools
KNS Electronics
LCC
David Levy
Linktronic Systems
Lockheed Martin Microwave-Narda
Lucent Technologies
Lyncole XIT Grounding
Marconi Instruments
Marketronics
Metro Tel
MLJ
Motorola Aftermarket Products
Motorola Communication Test Equipment
Mouser Electronics
Noise Com/Wireless Telecom Group
NS Electronics Service
Optoelectronics
PMC Assoc
Polaris Industries
Primus Electronics
Ramsey Electronics
RF Products

SAFCO Technologies

Sage Instruments
Santa Fe Distributing
Secom Systems
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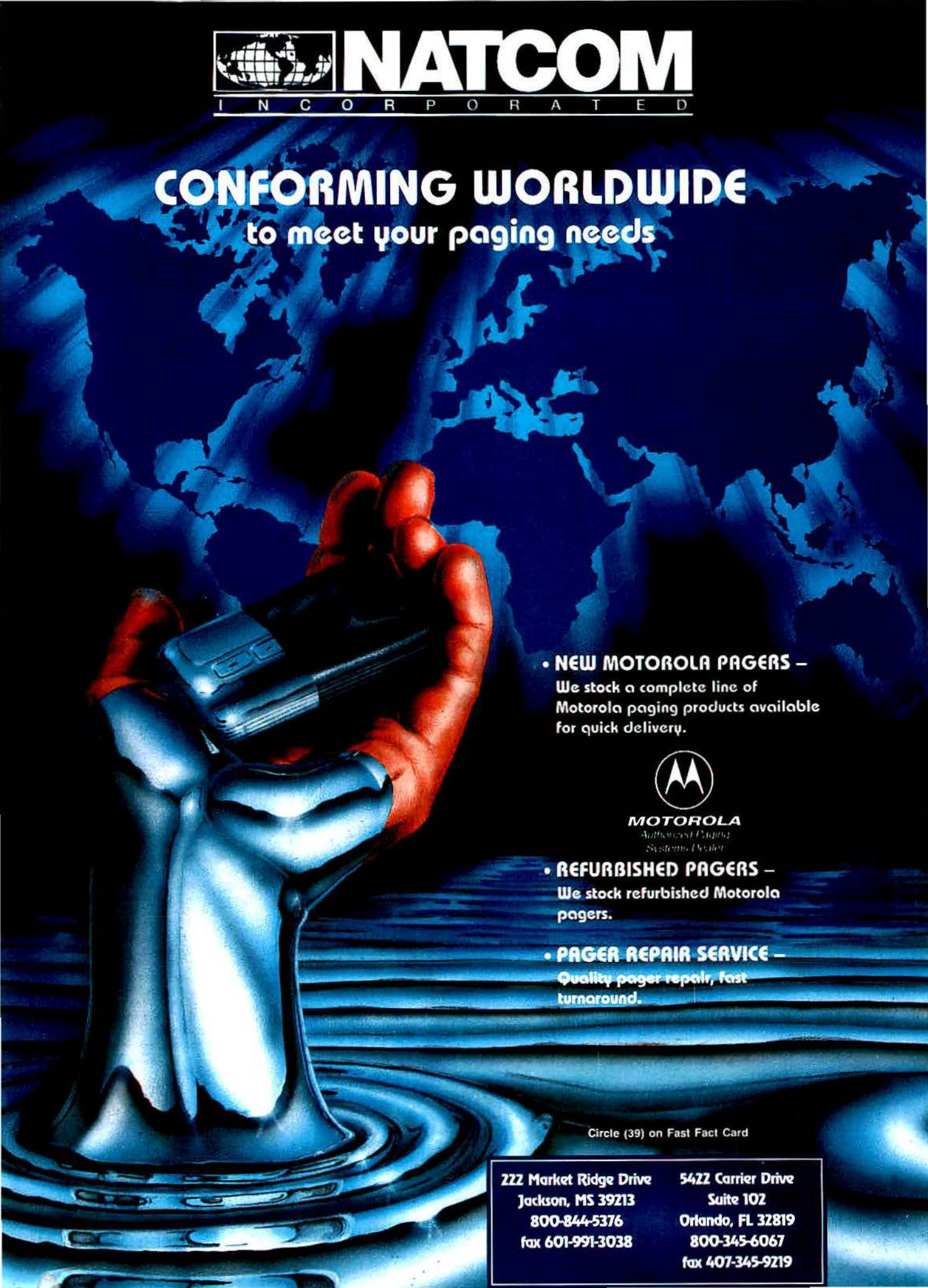
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B&C Communications
Beam Radio
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EPCOM
Icom America
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NSI Communication
SWS Security
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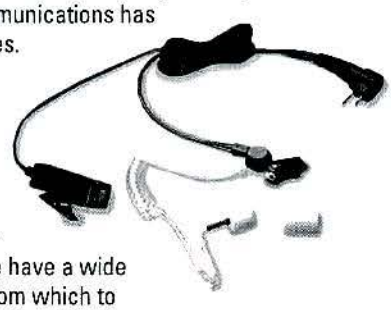
Transceivers, FM Conventional

B Base; M Mobile; P Portable

AAT Communications Systems BMP
Adams Distributing BMP
Advanced Cellular of Philadelphia
Advanced Electronics BMP
Air Comm BMP
Auto-Comm Engineering B
B&C Communications
Beam Radio BMP
BK Radio MP
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Communications & Signals BMP
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Cooks Communications
CP Communications BP
D&R Associates BMP
Danmax Communication BMP
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Delcom Industries
DX Radio Systems B
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EPCOM BMP
ETrunk Systems
ExCellular Communications BMP
Falcon Direct BMP
Fanon Courier P
Futurecom Systems Group M
Haewa Communications BMP
Hamtronics B
Henry Radio MP
Hill Radio Communications BMP
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Hutton Communications
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Icom America
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E F Johnson BMP
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Kenwood Systems Group
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Leavitt Communications BMP
Loudoun Communications MP
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Parkinson Electronics BMP
Procomm USA BMP
Professional Technology Systems
PT Systems
Radio Express MP
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Radio Systems P
Ranger Communications BMP
RELM Communications MP
RF Industries BM
RF Technology B
Ritron BMP
Santa Fe Distributing MP
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Sentry Services International
Sharp Communication BMP
Shinwa Communications
of America MP
Smith Communications
Service BMP
Spectrum Communications B
Standard Communications/Land
Mobile Div
Stuart Electronics
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Tad Radio of Canada
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Telemobile BMP
TelePath BMP
Teletec BM
The Communication Express . BMP
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Olympic Radio
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Professional Technology Systems
PT Systems
Radio Express
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Datron World Communications
EPCOM
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Harris/RF Communications Div
Icom America
E F Johnson
Kachina Communications
Marketronics
Mechem Electronics
MFJ Enterprises
Morcom International
NSI Communication
SEA
Spilsbury Communications Div
of Racal Canada
SWS Security
Synetcom Digital
Vertex Radio Communications
Wisco International
World Technical Services

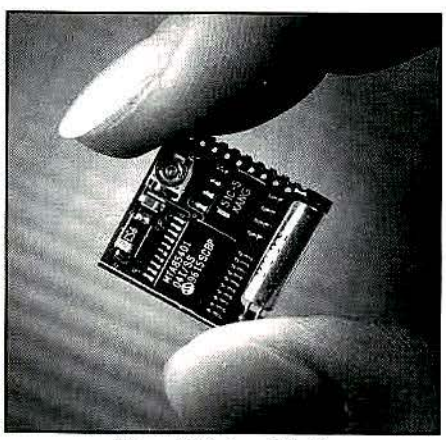
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JPS Communications
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Motorola Land Mobile Products Sector
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Santa Fe Distributing
Sharp Communication
Signalcrafters
Sunelco
Talley Communications
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ATA Information Systems
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Consultants

AAT Communications
Adcomm Engineering
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APREL
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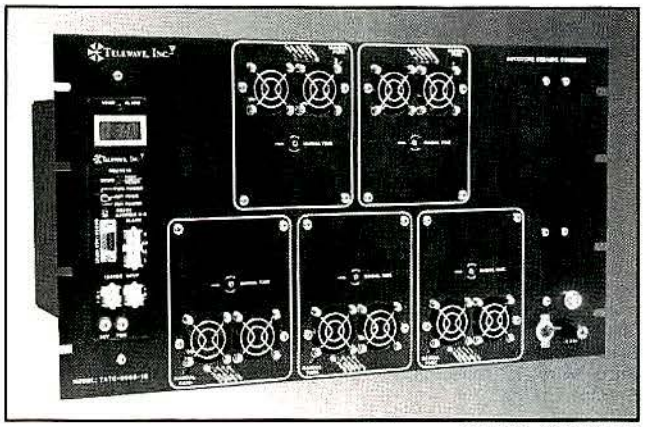
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ANTPD44

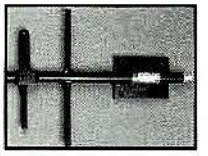
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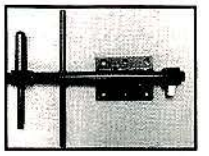
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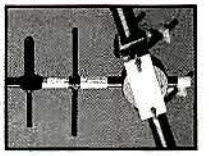
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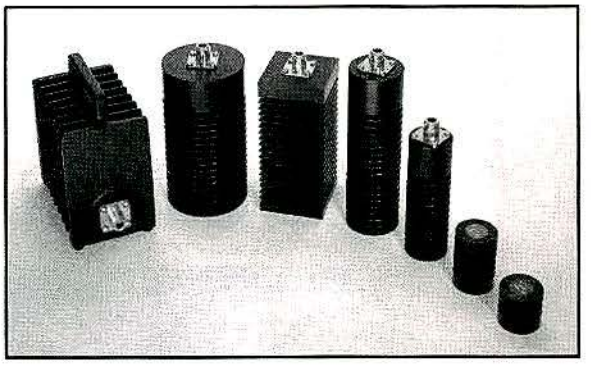


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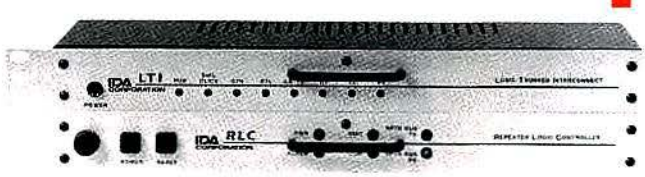
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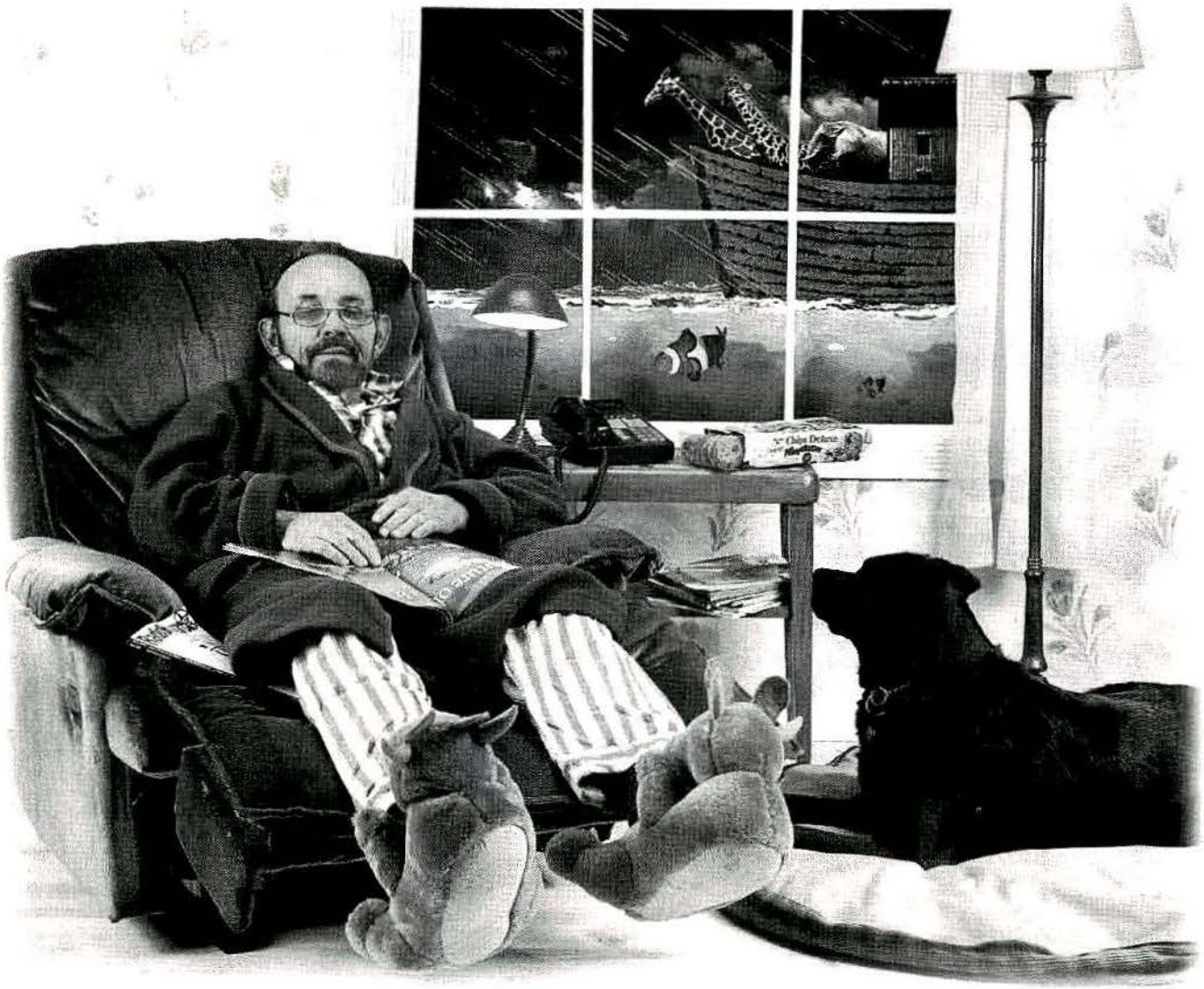
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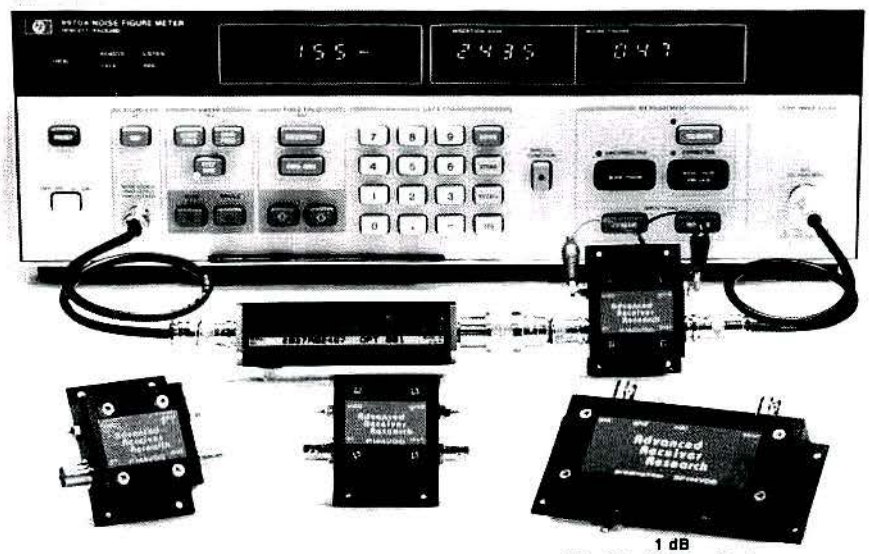
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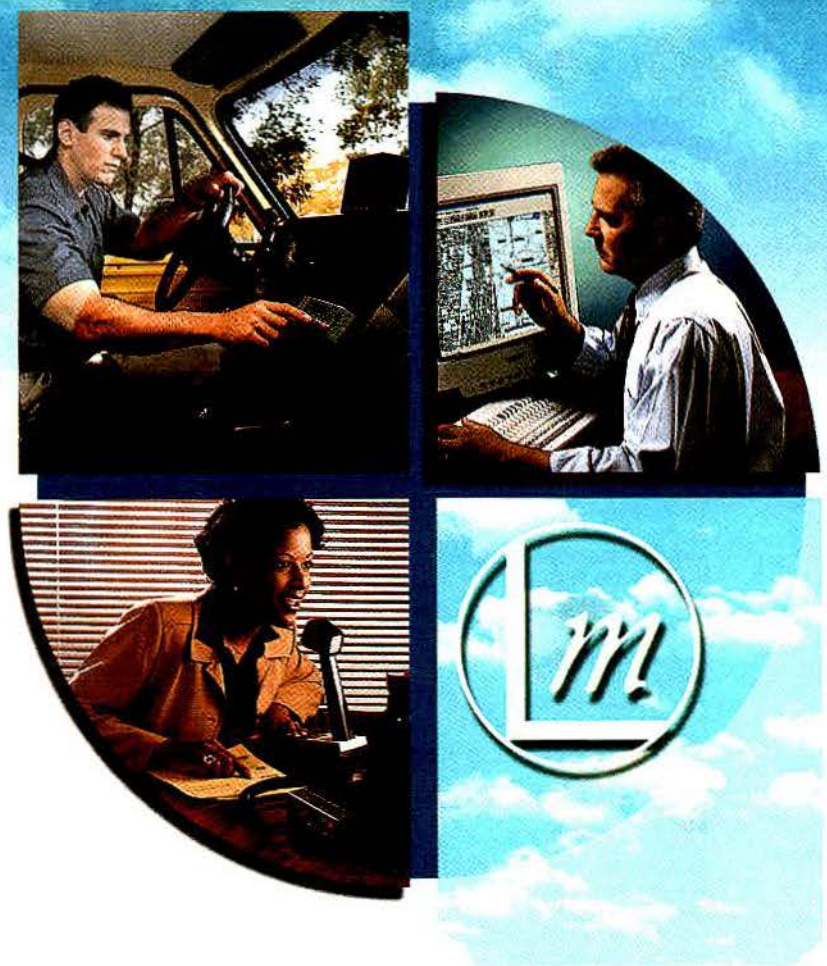
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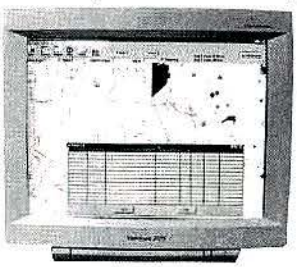
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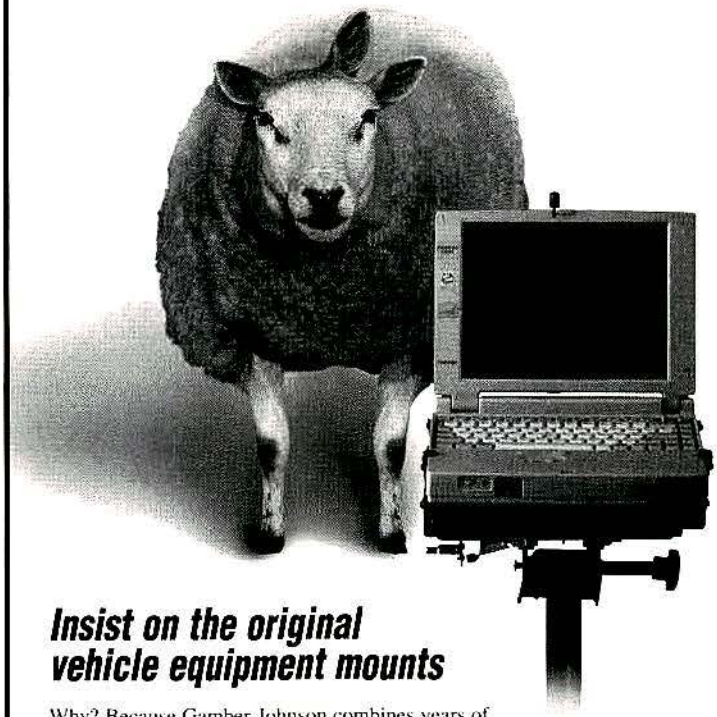
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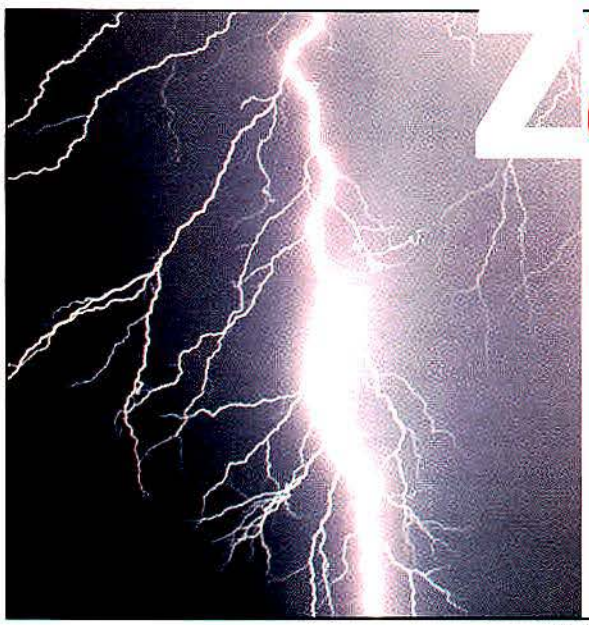
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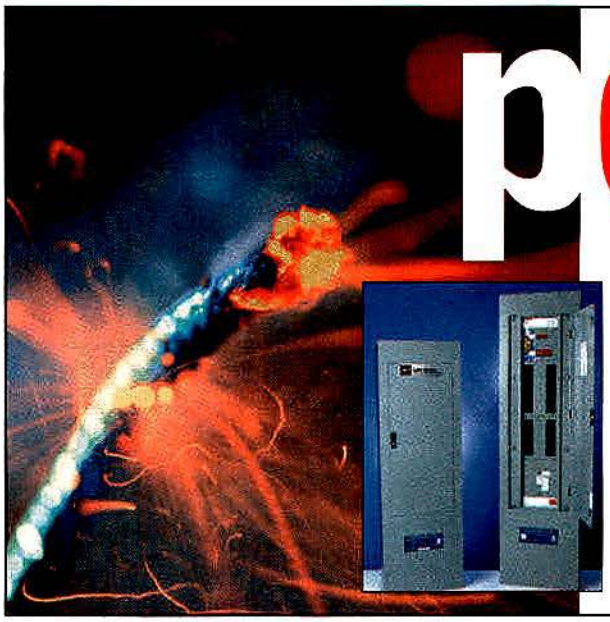
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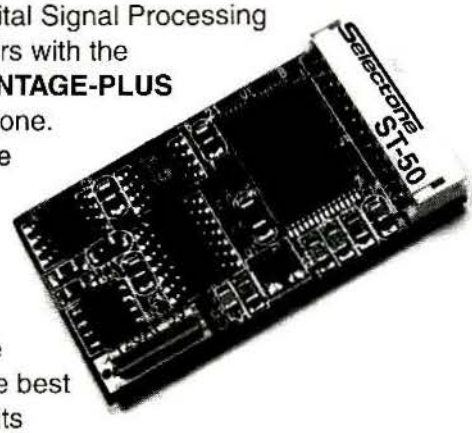
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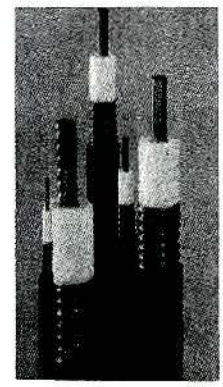
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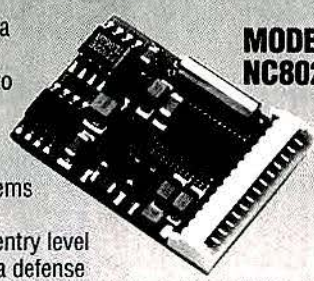
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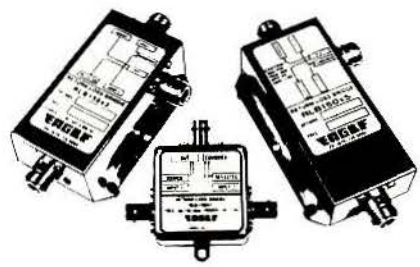
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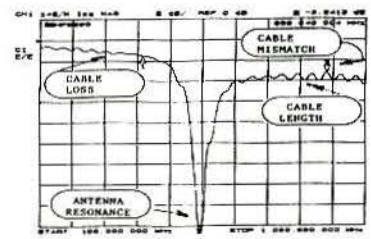
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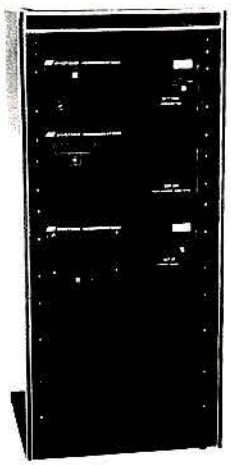
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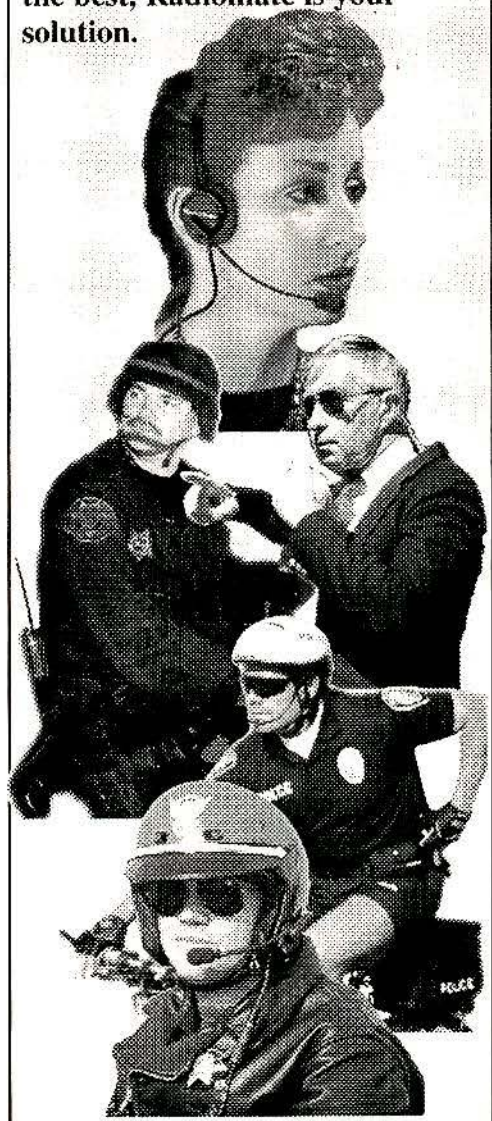
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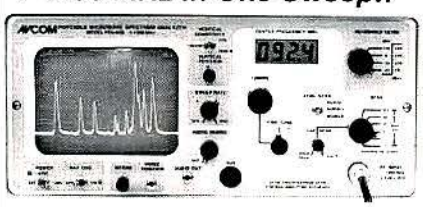
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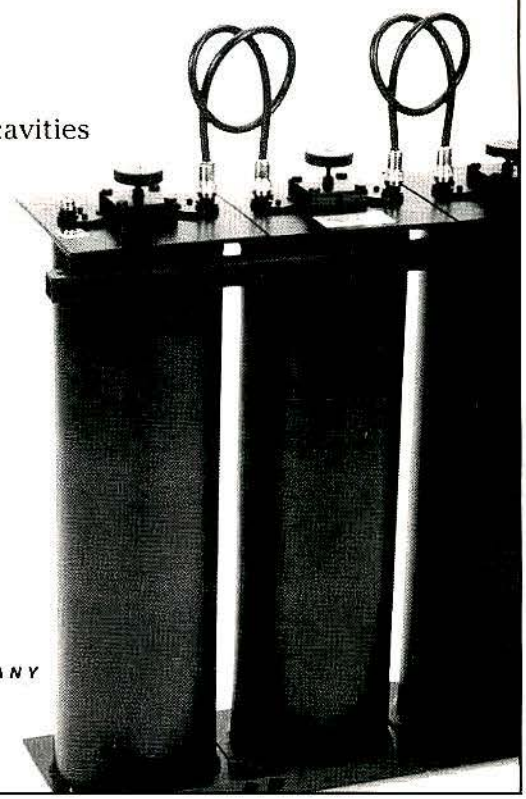
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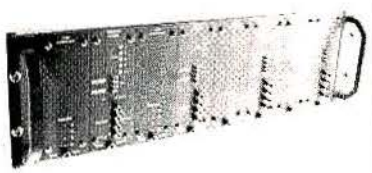
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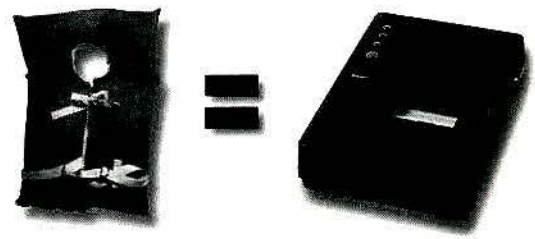
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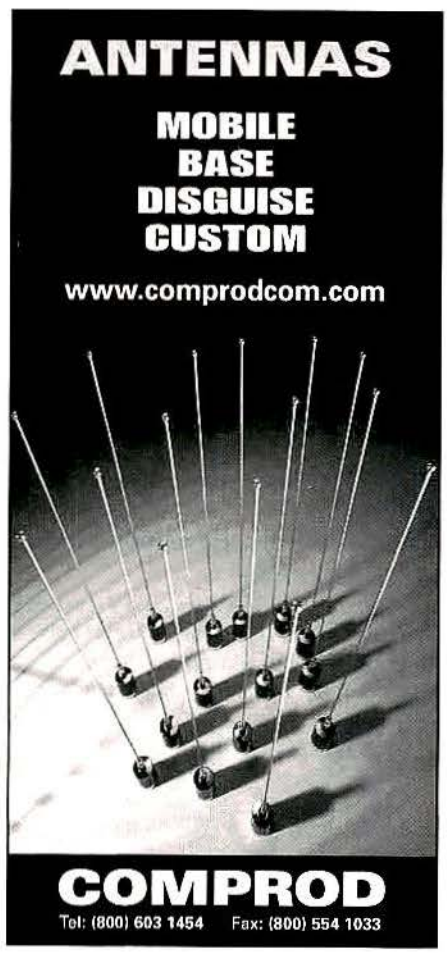
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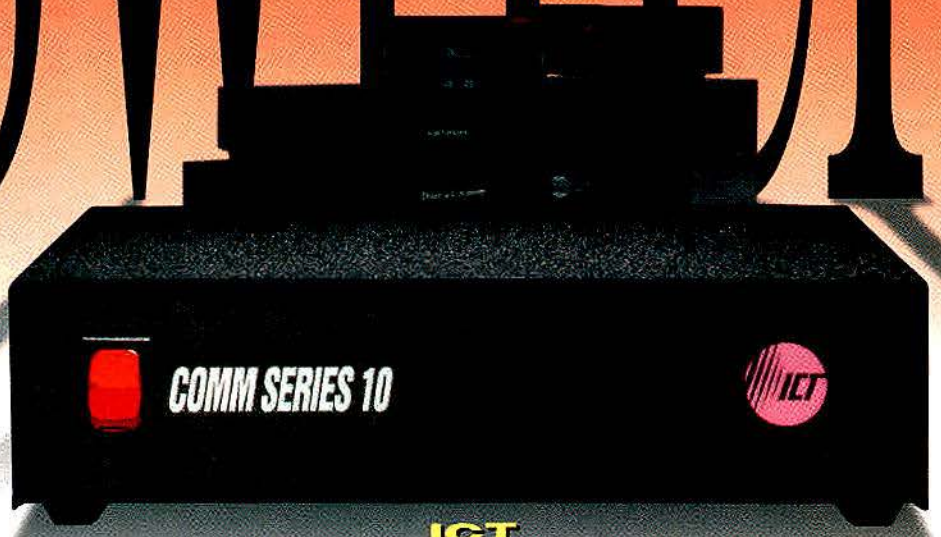
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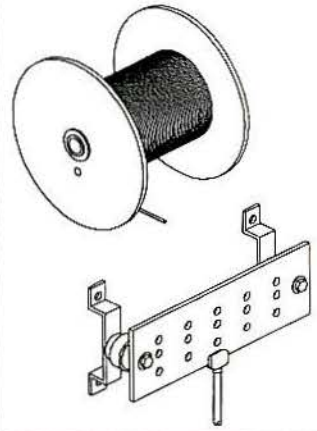
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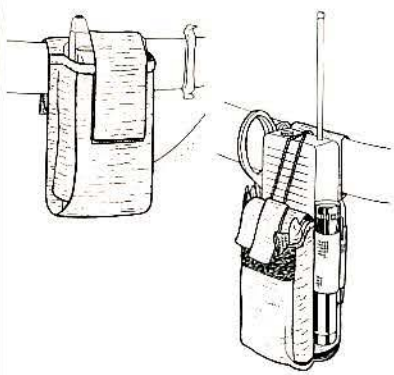
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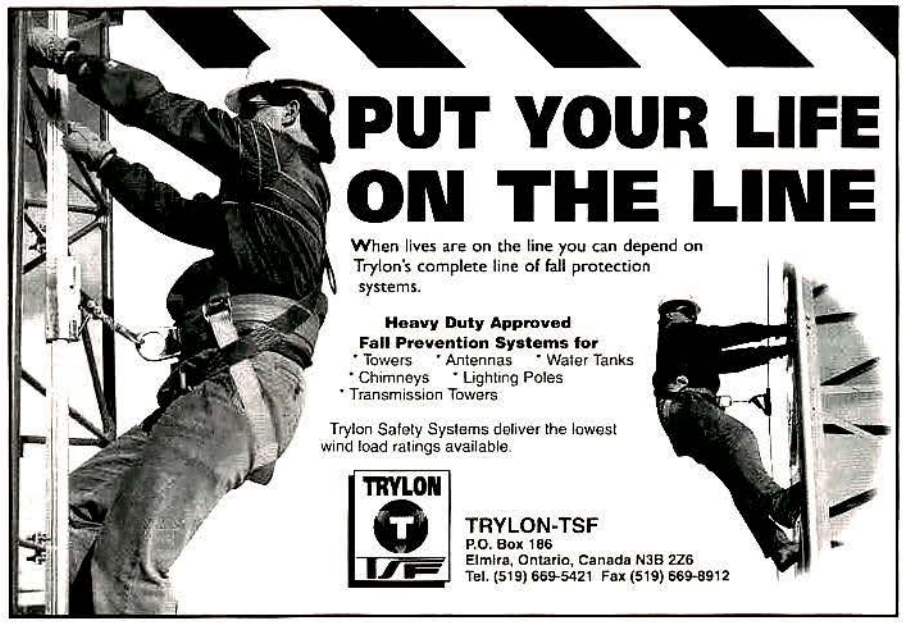
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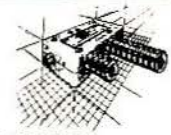
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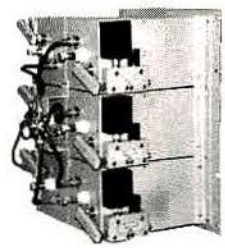
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D–F

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G–I

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J–L

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RADIUS — Jan Communications & Electronics
RADIUS — Motorola
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RFPATH — Communications Data Service
RFX — Amphenol RF/Microwave
RITRON TELEMETRY — Ritron
RMC — Trilogy Communications
ROAMNET — Sigtone
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S

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SANTA — Appropriate Data Communications
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SDP — Shinwa Communications of America
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SURGE MASTER, SURGE MASTER II — MCG Electronics
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SYSTEM — Telemobile

T

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U–V

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VXI — CommuniTech

W–Z

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WATTCHER — Bird Electronic
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XTRAFLEX — RF Industries (Neulink)
ZAP TRAP — Les Wallen USA
ZK SAM — ZK Celltest

Naughty or nice

By Robert H. Schwaninger Jr.



"Yeah, yeah. I'm know I'm early," said the ordinarily jolly old elf of fame and legend. He brushed a bit of soot from a red sleeve onto my white carpet, leaving a small black spot that he studied for only a moment. Shooting me a tired look he said, "So sue me—Oh yeah, you're a lawyer. I almost forgot."

I ignored the touch of sarcasm in his voice because this was St. Nick standing in my living room. Having gotten over my initial start, I took in the guy who has launched a million ads, jingles and songs and who is almost singularly responsible for several aisles of merchandise in Wal-Mart—a feat challenged only by an unnamed rabbit in spring.

He wore the uniform, but it seemed to be sagging in places where the legendary "bowl of jelly" normally resided. His fur-trimmed hat was askew, and his exposed brow was furrowed with lines. The black boots could have used a shine, and his mittened hands were bagless, unlike the two blood-shot eyes that peered at me.

Schwaninger, *MRT's* regulatory consultant, is a partner in the law firm of Brown and Schwaninger, Washington, DC, which also serves as general counsel to Small Business in Communications. He is a member of the Radio Club of America.

I gripped the glass of scotch that I'd been nursing and regained some small courage. "So, Mr. Claus (do you prefer Santa?). What can I do for you?" I managed weakly.

"Mind if I sit?" he asked. Not waiting for an answer, he plopped down in a convenient chair and let out an audible sigh. "I've been wracking my brain trying to figure my gift list this year. And I'm about at my wits' end! The guys and gals in the telecom industry have got me stumped. I can't figure who's been naughty and who's been nice. I've read the comments, checked out the legislation, scanned the *Journal* and tried to do my homework. But I still can't tell. The truth is, I need help."

"What can I do?" I asked. "I'd like to help, but let's face it, I'm kinda biased."

Santa waved away my protest with a mittened hand and continued. "Don't worry about it. You're easy. I've read your columns in *MRT* and it's obvious that you're crazy enough to speak your mind. That doesn't mean you're right. But being nuts enough to open your mouth could be real helpful." He then leaned toward me with a steely gaze. "Spill," the old elf commanded.

"Whattaya want to know?" I said with an unexpected quiver.

"I'll rattle off some names, and you tell me what jumps to mind."

"Okay."

"Mind if I take notes?" he asked, not waiting for a response while he pulled a leather notebook from somewhere. "Now, the first one is Sen. John McCain."

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himself. Conservative on auction issues and thinks that the broadcasters are getting a free ride. On the other hand, he hasn't lifted a single legislative hand to help small business regain its foothold in this industry."

"Good, good," he murmured. "How about Al Gore?"

"Gore's looking for major miracles to campaign on, like thinking that the Bell Companies will wire every school in America just because it's the right thing to do. But the RBOCs are too smart to invest that much money without getting something in return. Now they're wondering if Gore can deliver the goods."

"Reed Hundt?" he fired without warning.

"Who?" I asked. "Isn't regression a wonderful thing? It protects the psyche from the horrors of the past."

"Lonnie Danchik?" he said slowly.

"The chairman of SBT is a nice guy for a business man. By that I mean that he has integrity and is willing to fight back, even when he knows the odds are long."

"Okay, I expected that," Santa said. "Now, I've got this whole list of paging company CEOs. What's the scoop on them?"

Now it was my turn to sigh. "They're all suffering from a bad case of *post hubris*. In the eighties, that part of the industry was on fire. Cash flow, expected earnings, subscriber numbers, consolidation, and every other form of inducement appealed to Wall Street. Then in the mid-nineties, the financial markets discovered that paging companies had suffered the greatest irony. In their collective scramble to sell stock based on subscriber numbers, they had dropped prices to an unprofitable level. Now they've got the systems and the customers, but no profit. Wall Street guys are slow, but they finally noticed, and stock prices plummeted."

"So are they naughty or nice?" St. Nick asked with some impatience.

"I don't know," I replied. "Do you blame the magician when the trick stops working? Maybe."

"Craig McCaw?" he drawled, going on.

"Another magician that got out before the trick was figured out. Ran his cellular company into a multibillion-dollar enterprise and sold out to AT&T for a price that was only 37.5% more than what the company was valued at six years earlier. Do the math. The last six years the company's annual return on investment was about 5%, lower than a good CD."

"Ancient history," Santa coughed. "What about this year?"

"This year McCaw's sinking money into Nextel, another company that is so far from profitable that it's scary."

"Why's he doing it?"

"Beats me," I said. "All I've got are guesses."

While I poured some single malt over ice for St. Nick, I took my time in responding. Finally I said, "McCaw's banking that the IDEN technology will reap profits overseas while his presence within the company will keep stock prices high. So, he and Motorola are willing to take a bath in this country to swing deals in, say, Brazil. The U.S. system is an oversized beta test."

The scotch wasn't the only thing pouring out. By the time the fire had died, I'd told him about the IVDS guys who'd gotten screwed by the FCC, Quello rolling over on the 800MHz auction, Chong's strange connections to Nextel while writing rules, the hair pulling between CTIA and PCIA, Crosby, Shark, Kennard,

'So are they naughty or nice?' St Nick asked... I replied. 'Do you blame the magician when the trick stops working? Maybe.'

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After what seemed like hours he said, "Okay, okay, that's about got it," while rising out of his chair, downing the last of his third scotch. "Just one more question," Santa said. "Who's the best person in the industry?"

"That one's easy and difficult at the same time."

"Try it," he demanded.

"The best person in the industry is the first member of Congress with the courage to investigate the FCC and stop the madness."

"Who's that?"

"That," I said with a tired smile, "is the real Santa Claus."

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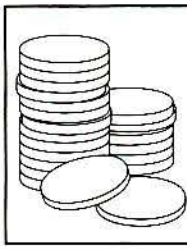


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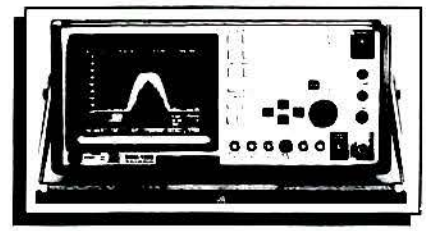
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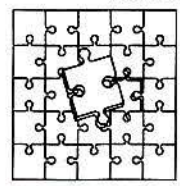
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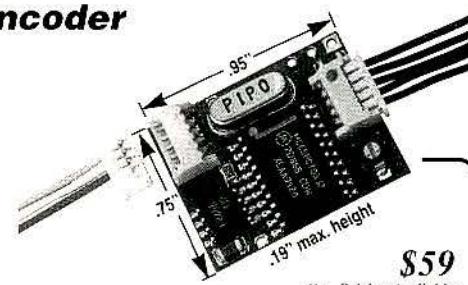
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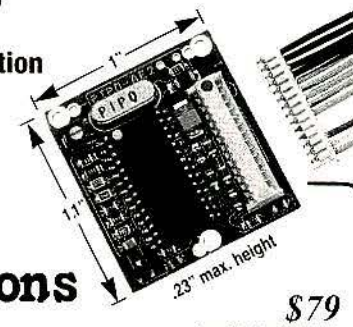
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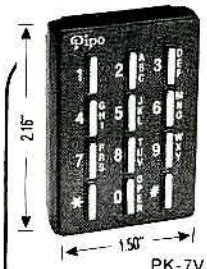
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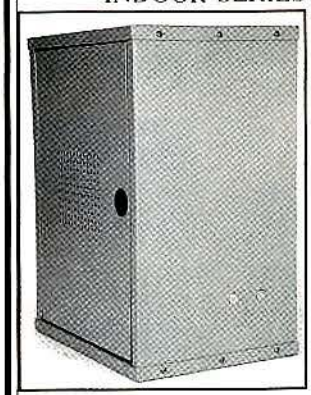
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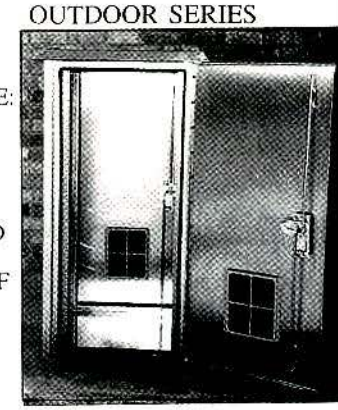
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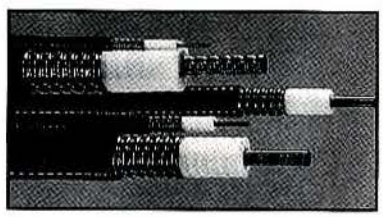
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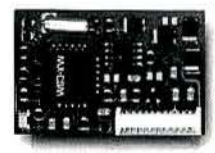
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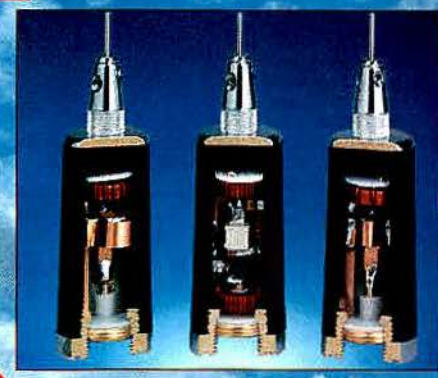
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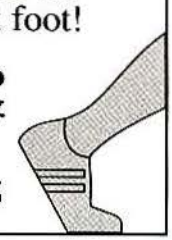
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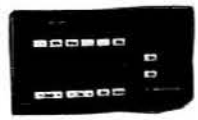
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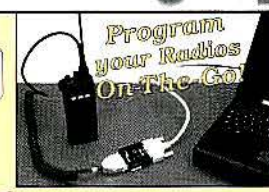
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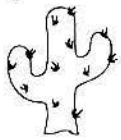
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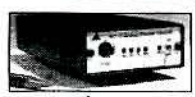
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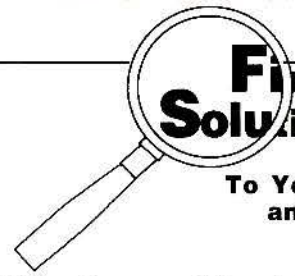
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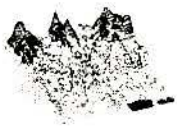
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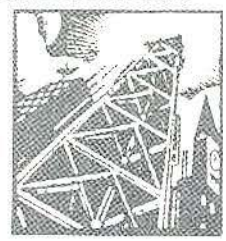
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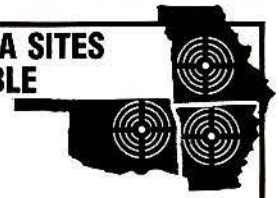
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AF Comm Supply	128	130	800-255-6222
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Avcom of Virginia	98	83	804-794-2500
Barnett Electronics Inc.	127	127	800-423-3858
Battery Network	12	20	760-740-6670
BEE Electronics Inc.	28	27	800-336-3115
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ChargeGuard Corp.	125	122	800-458-3410
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CPI Communications Inc.	113	93	972-437-5320
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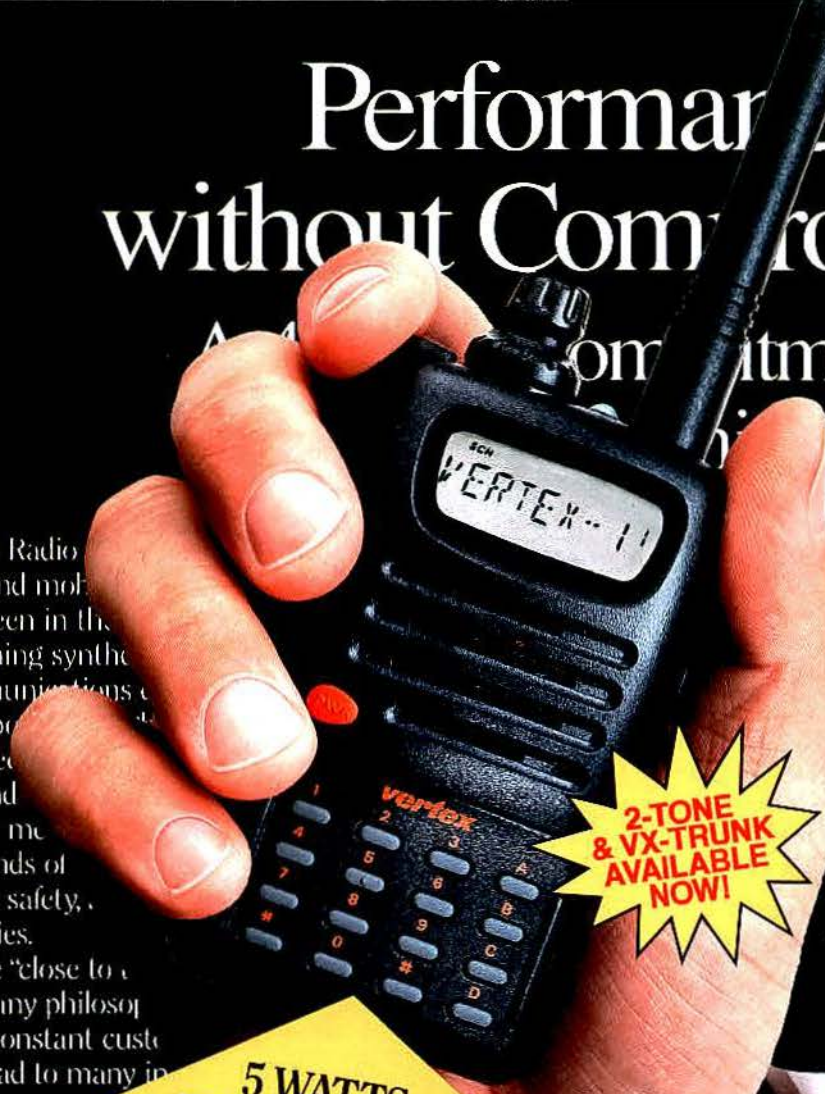
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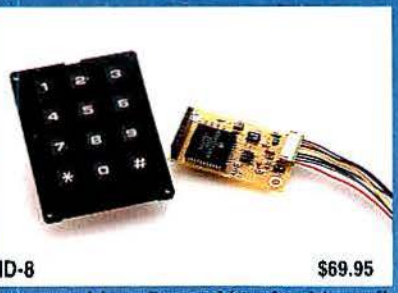
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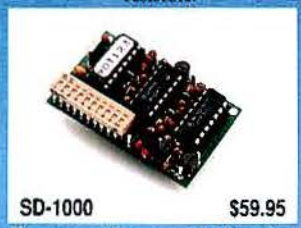
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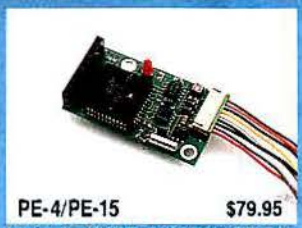
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